



STIC Search Report

EIC 1700

STIC Database Tracking Number: 104223

TO: Lynette T Umez-Eronini
Location: CP3 10E12
Art Unit : 1765
September 25, 2003

Case Serial Number: 09/891730

From: John Calve
Location: EIC 1700
CP3/4-3D62
Phone: 308-4139

John.Calve@uspto.gov

Search Notes

SEARCH REQUEST FORM**Scientific and Technical Information Center**

Requester's Full Name: Rebecca Chen Ermini Examiner #: 14987 Date: 9/22/03
 Art Unit: 1765 Phone Number (703) 656-7474 Serial Number: 09/891730
 Mail Box and Bldg/Room Location: CPS 1012 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers; and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

STAFF USE ONLY		Type of Search	Vendors and cost where applicable
Searcher:	<u>JC</u>	NA Sequence (#)	STN <u>4P</u>
Searcher Phone #:		AA Sequence (#)	Dialog
Searcher Location:	<u>9/24/03</u>	Structure (#)	Questel/Orbit
Date Searcher Picked Up:	<u>9/24/03</u>	Bibliographic	Dr. Link
Date Completed:	<u>9/24/03</u>	Litigation	Lexis/Nexis
Searcher Prep & Review Time:	<u>1</u>	Fulltext	Sequence Systems
Clerical Prep Time:		Patent Family	WWW/Internet
Online Time:	<u>120</u>	Other	Other (specify)



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact **the EIC searcher or contact:**

Kathleen Fuller, EIC 1700 Team Leader
308-4290, CP3/4-3D62

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
➤ Relevant prior art **found**, search results used as follows:

- 102 rejection
- 103 rejection
- Cited as being of interest.
- Helped examiner better understand the invention.
- Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- Foreign Patent(s)
- Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

- Relevant prior art **not found**:

- Results verified the lack of relevant prior art (helped determine patentability).
- Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to STIC/EIC1700 CP3/4 3D62



=> file hca

FILE 'HCA' ENTERED AT 15:17:28 ON 24 SEP 2003
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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FILE COVERS 1907 - 18 Sep 2003 VOL 139 ISS 13
FILE LAST UPDATED: 18 Sep 2003 (20030918/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d his

(FILE 'HOME' ENTERED AT 14:48:20 ON 24 SEP 2003)

FILE 'HCA' ENTERED AT 14:49:46 ON 24 SEP 2003
E US20020102852/PN

L1 1 S E3
SEL L1 RN
S L*** AND 7732-18-5/REG#

FILE 'REGISTRY' ENTERED AT 14:50:16 ON 24 SEP 2003

FILE 'HCA' ENTERED AT 14:50:16 ON 24 SEP 2003

FILE 'REGISTRY' ENTERED AT 14:50:47 ON 24 SEP 2003

L2 19 S E1-E19
L3 ' 1 S L2 AND 1336-21-6
L4 1 S L2 AND 7722-84-1
L5 ' 1 S L2 AND 7732-18-5

L6 FILE 'HCA' ENTERED AT 14:52:14 ON 24 SEP 2003
16820 S L3 OR AMMONIUM#(N)HYDROXIDE#
L7 77407 S L4
L8 309980 S L5

FILE 'HCA' ENTERED AT 14:53:30 ON 24 SEP 2003

L9 FILE 'LCA' ENTERED AT 14:53:33 ON 24 SEP 2003
197 S AMMONIUM#(N)HYDROXIDE# OR NH4(W)OH OR NH4OH
L10 198 S (AMMONIUM# OR NH4)(N)HYDROXIDE# OR NH4(W)OH OR NH4OH
L11 376 S HYDROGEN#(N)PEROXIDE# OR H2O2

L12 7537 S WATER# OR H2O
L13 1000 S SURFACT? OR BIOSURFACT? OR HYDROTROP? OR DETERG? OR ABSTERG?
L14 1358 S CLEAN? OR DETERS? OR ABSTERS? OR EDULCORAT? OR DECONTAMINA? O

FILE 'HCA' ENTERED AT 14:58:12 ON 24 SEP 2003
L15 16820 S L6
L16 13167 S L3
L17 81521 S L10 OR L16
L18 166099 S L7 OR L11
L19 2764755 S L12 OR L8
L20 5450 S L17 AND L18
L21 3318 S L20 AND L19
L22 348318 S L13
L23 493124 S L14
L24 481 S L21 AND L14
L25 38 S L24 AND L22

FILE 'LCA' ENTERED AT 15:02:28 ON 24 SEP 2003
L26 2633 S SEMI(W)CONDUCT? OR WAFER? OR DEVICE? OR SUBSTRATE? OR VLSI OR
L27 0 S L25 AND L26

FILE 'HCA' ENTERED AT 15:04:04 ON 24 SEP 2003
L28 22 S L25 AND L26

FILE 'LCA' ENTERED AT 15:04:55 ON 24 SEP 2003
L29 2604 S SULFATE? OR ETHER?
L30 3238 S ?ETHYLENE?

FILE 'HCA' ENTERED AT 15:08:40 ON 24 SEP 2003
L31 9 S L25 AND L30
L32 8 S L25 AND L29
L33 12 S L31 OR L32
L34 34 S L25 AND 1907-2000/PY, PRY ***** Date limited results*****
L35 9 S L33 AND L34
L36 15 S L28 NOT L33
L37 14 S L36 AND L34
L38 11 S L34 NOT (L35 OR L36 OR L37)
L39 3 S L33 NOT L35
L40 15 S L36 NOT L35
L41 11 S L34 NOT (L35 OR L36)

=> d his nofile L42-

(FILE 'JAPIO, WPIX' ENTERED AT 15:19:54 ON 24 SEP 2003)
L42 9548 SEA ABB=ON PLU=ON L9
L43 36138 SEA ABB=ON PLU=ON L11
L44 1753336 SEA ABB=ON PLU=ON L12
SET MSTEPS ON
L45 62332 SEA ABB=ON PLU=ON SURFACT? OR BIOSURFACT? OR HYDROTROP? OR
DETERG? OR ABSTERG? OR (SURFACE(W)ACTIVE# OR WETTING# OR
FOAMING#) (A) (AGENT? OR ADDITIVE? OR COMPOUND? OR COMPD# OR
CMPD#) OR EMULSIFIER? OR DISPERSANT?
L46 180908 SEA ABB=ON PLU=ON SURFACT? OR BIOSURFACT? OR HYDROTROP? OR
DETERG? OR ABSTERG? OR (SURFACE(W)ACTIVE# OR WETTING# OR
FOAMING#) (A) (AGENT? OR ADDITIVE? OR COMPOUND? OR COMPD# OR
CMPD#) OR EMULSIFIER? OR DISPERSANT?
TOTAL FOR ALL FILES
L47 243240 SEA ABB=ON PLU=ON L13
L48 150090 SEA ABB=ON PLU=ON CLEAN? OR DETERS? OR ABSTERS? OR EDULCORAT?
OR DECONTAMINA? OR ABLUT? OR ELUTION# OR ELUTRIAT? OR SCRUB?

OR SCOUR? OR DEGREAS?

L49 346351 SEA ABB=ON PLU=ON CLEAN? OR DETERS? OR ABSTERS? OR EDULCORAT?
OR DECONTAMINA? OR ABLUT? OR ELUTION# OR ELUTRIAT? OR SCRUB?
OR SCOUR? OR DEGREAS?

TOTAL FOR ALL FILES

L50 496441 SEA ABB=ON PLU=ON L14
L51 38 SEA ABB=ON PLU=ON L42 AND L43 AND L44
L52 441 SEA ABB=ON PLU=ON L42 AND L43 AND L44

TOTAL FOR ALL FILES

L53 479 SEA ABB=ON PLU=ON L42 AND L43 AND L44
SET MSTEPS OFF
L54 479 SEA ABB=ON PLU=ON L51 AND (L47 OR L53)
SET MSTEPS ON
L55 38 SEA ABB=ON PLU=ON L51 AND (L45 OR L51)
L56 441 SEA ABB=ON PLU=ON L51 AND (L46 OR L52)

TOTAL FOR ALL FILES

L57 479 SEA ABB=ON PLU=ON L51 AND (L47 OR L53)
L58 20 SEA ABB=ON PLU=ON L51 AND L48
L59 160 SEA ABB=ON PLU=ON L52 AND L49

TOTAL FOR ALL FILES

L60 180 SEA ABB=ON PLU=ON L53 AND L50

FILE 'WPIX' ENTERED AT 15:24:53 ON 24 SEP 2003
E US2002102852/PN

L61 1 SEA ABB=ON PLU=ON US2002102852/PN
D SCAN
D L61 MC

FILE 'STNGUIDE' ENTERED AT 15:25:47 ON 24 SEP 2003

FILE 'WPIX' ENTERED AT 15:27:54 ON 24 SEP 2003

L62 38735 SEA ABB=ON PLU=ON D11?/MC
L63 198397 SEA ABB=ON PLU=ON L04-C?/MC
L64 322217 SEA ABB=ON PLU=ON U11-C?/MC
L65 16 SEA ABB=ON PLU=ON L59 AND L13
L66 160 SEA ABB=ON PLU=ON L59 AND L14
L67 6 SEA ABB=ON PLU=ON L66 AND L62
L68 4 SEA ABB=ON PLU=ON L67 AND (L26 OR IC OR INTEGRAT?(A)CIRCUIT?)

L69 2945741 SEA ABB=ON PLU=ON (L26 OR IC OR INTEGRAT?(A)CIRCUIT?)
L70 135 SEA ABB=ON PLU=ON L66 AND L69
L71 12 SEA ABB=ON PLU=ON L65 AND L70
L72 9 SEA ABB=ON PLU=ON L71 NOT L68

FILE 'JAPIO' ENTERED AT 15:34:44 ON 24 SEP 2003

L73 2745476 SEA ABB=ON PLU=ON (L26 OR IC OR INTEGRAT?(A)CIRCUIT?)
L74 20 SEA ABB=ON PLU=ON L55 AND L14
L75 0 SEA ABB=ON PLU=ON L74 AND L13
L76 1 SEA ABB=ON PLU=ON L55 AND L13
L77 16 SEA ABB=ON PLU=ON L74 AND L73

FILE 'STNGUIDE' ENTERED AT 15:37:05 ON 24 SEP 2003

FILE 'JAPIO' ENTERED AT 15:40:29 ON 24 SEP 2003

L78 17 SEA ABB=ON PLU=ON L77 OR L76
D SCAN
L79 2411529 SEA ABB=ON PLU=ON SOLUTION# OR SOLN#
L80 16 SEA ABB=ON PLU=ON L78 AND L79
SET MSTEPS ON

FILE 'HCA, WPIX, JAPIO' ENTERED AT 15:46:15 ON 24 SEP 2003
 L81 66 DUP REM L25 L65 L71 L80 (16 DUPLICATES REMOVED)
 L82 38 SEA L81
 L83 28 SEA ABB=ON PLU=ON L82 AND L80
 L84 12 SEA L81
 L85 16 SEA L81

FILE 'JAPIO' ENTERED AT 15:47:46 ON 24 SEP 2003
 SET MSTEPS OFF
 L86 16 SEA L81
 L87 15 SEA ABB=ON PLU=ON L77 AND L86

FILE 'WPIX' ENTERED AT 15:49:08 ON 24 SEP 2003
 L88 12 SEA L81
 L89 8 SEA ABB=ON PLU=ON (L72 OR L68) AND L88

=> d L35 1-9 ibib abs hitind hitrn

L35 ANSWER 1 OF 9 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 137:40135 HCA
 TITLE: Stabilized alkaline solutions for cleaning
 of semiconductor substrates for microelectronic
 applications
 INVENTOR(S): Skee, David C.
 PATENT ASSIGNEE(S): USA
 SOURCE: U.S. Pat. Appl. Publ., 27 pp., Cont.-in-part of U.S.
 Ser. No. 688,559.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2002077259	A1	20020620	US 2001-859142	20010516 <--
US 6599370	B2	20030729		
US 6585825	B1	20030701	US 2000-688559	20001016 <--
WO 2002033033	A1	20020425	WO 2001-US42406	20010928 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
AU 2001096947	A5	20020429	AU 2001-96947	20010928 <--
EP 1326951	A1	20030716	EP 2001-977863	20010928 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRIORITY APPLN. INFO.:			US 2000-688559	A2 20001016 <--
			US 1998-85861P	P 19980518 <--
			US 1999-115084P	P 19990107 <--
			WO 1999-US10875	A2 19990517 <--
			US 2001-859142	A 20010516
			WO 2001-US42406	W 20010928

- AB This invention relates to compns. useful in the microelectronics industry for **cleaning** semiconductor wafer substrates. Particularly, this invention relates to alk. stripping or **cleaning** compns. contg. bath stabilizing agents that are used for **cleaning** wafers having metal lines and vias by removing metallic and org. contamination without damaging the integrated circuits. The invention provides aq. alk. compns. useful in the microelectronics industry for stripping or **cleaning** semiconductor wafer substrates by removing photoresist residues and other unwanted contaminants. The compns. typically contain (a) one or more metal ion-free bases at sufficient amts. to produce a pH of .apprx.10-13 and .gtoreq.1 bath stabilizing agents having at least one pKa at 10-13 to maintain this pH during use; (b) optionally, .apprx.0.01% to .apprx.5% by wt. (expressed as % SiO₂) of a H₂O-sol. metal ion-free silicate; (c) optionally, .apprx.0.01% to .apprx.10% by wt. of .gtoreq.1 chelating agents; (d) optionally, .apprx.0.01% to .apprx.80% by wt. of .gtoreq.1 H₂O-sol. org. cosolvents; and (e) optionally, .apprx.0.01% to .apprx.1% by wt. of a H₂O-sol. **surfactant**.
- IC ICM B08B007-00
ICS B08B003-00; C23G001-00; C23G001-02; C03C023-00; F23J001-00;
B08B003-10; B08B003-14
- NCL 510175000
- CC 76-2 (Electric Phenomena)
Section cross-reference(s): 48
- ST semiconductor material alk **cleaning** soln
- IT Silicates, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(bath stabilizing agent; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)
- IT Amino acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(chelating agent; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)
- IT Alcohols, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(cosolvent; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)
- IT Photoresists
(residue removal; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)
- IT Amines, processes
Quaternary ammonium compounds, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(semiconductor **cleaning** soln. alk. component; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)
- IT Chelating agents
Cleaning
Interconnections, electric
Semiconductor materials
Stabilizing agents
Surfactants
(stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)
- IT Bases, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 107-15-3, 1,2-Ethanediamine, processes 109-76-2, 1,3-Propanediamine 110-60-1, 1,4-Butanediamine 124-09-4, 1,6-Hexanediamine, processes 373-44-4, 1,8-Octanediamine 589-37-7, 1,3-Diaminopentane 2783-17-7, 1,12-Dodecanediamine 15520-10-2, 2-Methyl-1,5-pentanediamine
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(bath stabilizing agent, semiconductor **cleaning** soln. alk. component; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 69-72-7, Salicylic acid, processes 94-67-7, Salicylaldoxime 97-05-2, 5-Sulfosalicylic acid 108-46-3, Resorcinol, processes 127-06-0, Acetone oxime 142-08-5, 2-Hydroxypyridine 504-15-4, Orcinol 608-25-3, 2-Methylresorcinol 626-64-2, 4-Hydroxypyridine 7664-38-2, Phosphoric acid, processes **7722-84-1, Hydrogen peroxide**, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(bath stabilizing agent; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 60-00-4, (**Ethylenedinitrilo**)tetraacetic acid, processes 67-43-6, **Diethylenetriaminepentaacetic** acid 482-54-2, (1,2-Cyclohexylenedinitrilo)tetraacetic acid 869-52-3, **Triethylenetetraminehexaacetic** acid 1429-50-1 2809-21-4 3148-72-9, 1,3-Diamino-2-hydroxypropane-N,N,N',N'-tetraacetic acid 6419-19-8, Nitrilotris(**methylene**)triphosphonic acid 13291-61-7, trans-(1,2-Cyclohexylenedinitrilo)tetraacetic acid 13598-36-2D, Phosphonic acid, derivs. 15827-60-8, **Diethylenetriaminepenta(methylenephosphonic acid)** 34690-00-1 37971-36-1, 2-Phosphonobutane-1,2,4-tricarboxylic acid 83834-39-3 91987-74-5 92761-25-6 122114-60-7
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(chelating agent; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 7429-90-5, Aluminum, processes 11099-19-7
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**cleaning** of; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 56-81-5, Glycerol, processes 52928-63-9D, 1-Hydroxy-2-pyrrolidinone, alkyl derivs.
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(cosolvent; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 62-49-7, Choline 75-59-2, Tetramethylammonium hydroxide 77-98-5, Tetraethylammonium hydroxide 462-94-2, 1,5-Pentanediamine 631-41-4, Tetraethanolammonium hydroxide 646-19-5, 1,7-Heptanediamine 646-24-2, 1,9-Nonanediamine 646-25-3, 1,10-Decanediamine 822-08-2, 1,11-Undecanediamine **1336-21-6D, Ammonium hydroxide**, derivs. 2052-49-5, Tetrabutylammonium hydroxide 4499-86-9, Tetrapropylammonium hydroxide 12794-95-5D, Ammonium silicate, derivs. 33667-48-0, Monomethyltriethanolammonium hydroxide 53116-81-7, Tetramethyl ammonium silicate 109334-81-8, Methyltriethylammonium hydroxide
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(semiconductor **cleaning** soln. alk. component; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 9014-85-1, Surfynol 465
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (surfactant; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 7722-84-1, Hydrogen peroxide, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (bath stabilizing agent; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

IT 1336-21-6D, Ammonium hydroxide, derivs.
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (semiconductor **cleaning** soln. alk. component; stabilized alk. solns. for **cleaning** of semiconductor substrates for microelectronic applications)

L35 ANSWER 2 OF 9 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER:

136:91434 HCA

TITLE:

Cleaning method and solution for **cleaning** a wafer in a single wafer process

INVENTOR(S):

Verhaverbeke, Steven; Truman, J. Kelly

PATENT ASSIGNEE(S):

Applied Materials, Inc., USA

SOURCE:

PCT Int. Appl., 58 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002001609	A2	20020103	WO 2001-US41160	20010626 <--
W: CN, JP, KR				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
US 2002102852	A1	20020801	US 2001-891730	20010625 <--
PRIORITY APPLN. INFO.:			US 2000-214116P	P 20000626 <--
			US 2001-891730	A 20010625

AB The present invention is a novel **cleaning** method and a soln. for use in a single wafer **cleaning** process. According to the present invention the **cleaning** soln. comprises NH₄OH, H₂O₂, H₂O and a chelating agent. In an embodiment of the present invention the **cleaning** soln. also contains a **surfactant**. And still yet another embodiment of the present invention the **cleaning** soln. also comprises a dissolved gas such as H₂. In a particular embodiment of the present invention, this soln. is used by spraying or dispensing it on a spinning wafer.

IC ICM H01L

CC 66-6 (Surface Chemistry and Colloids)

Section cross-reference(s): 76

ST wafer **cleaning** soln single process

IT Chelating agents

Surfactants

(NH₄OH/H₂O₂/H₂O/chelating agent/
surfactant; **cleaning** method and soln. for
cleaning a wafer in a single wafer process)

- IT Carboxylic acids, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(chelating agent; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT Vapor deposition process
(chem.; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT Annealing
Cavitation
Degassing
Oxidation
Spraying
Ultrasonic cleaning
(**cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT **Cleaning**
(megasonic; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT Ashing
(oxygen; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT Semiconductor materials
(wafer; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 7722-84-1, Hydrogen peroxide, processes 7732-18-5, Water, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(NH4OH/H2O2/H2O/chelating agent/
surfactant; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT 7782-44-7, Oxygen, processes 10028-15-6, Ozone, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(cavitation gases, oxidant in rinse soln.; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT 7440-37-1, Argon, processes 7440-59-7, Helium, processes 7727-37-9, Nitrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(cavitation gases; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT 60-00-4, Ethylenediaminetetraacetic acid, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(chelating agent; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT 70-51-9, Desferrioxamine B 869-52-3, TTHA 7782-91-4, Molybdic acid 26636-37-3 35998-29-9 256326-70-2 385765-20-8, MCX-SD 2000
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**cleaning** method and soln. for **cleaning** a wafer in a single wafer process)
- IT 1333-74-0, Hydrogen, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(dissolved gas, cavitation gas; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)

IT 7664-39-3, Hydrogen fluoride, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (etching soln.; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)

IT 124-38-9, Carbon dioxide, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (to dissipate static electricity in rinse soln.; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)

IT 1336-21-6, Ammonium hydroxide ((NH₄)₂OH) 7722-84-1, Hydrogen peroxide, processes 7732-18-5, Water, processes
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (NH₄OH/H₂O₂/H₂O/chelating agent/surfactant; **cleaning** method and soln. for **cleaning** a wafer in a single wafer process)

L35 ANSWER 3 OF 9 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 133:47594 HCA
 TITLE: Wet **cleaning** of silicon carbide ceramics
 INVENTOR(S): Otsuki, Masami; Wada, Hiroaki
 PATENT ASSIGNEE(S): Bridgestone Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000169233	A2	20000620	JP 1998-348701	19981208 <--
US 2002005213	A1	20020117	US 1999-449764	19991126 <--
PRIORITY APPLN. INFO.:			JP 1998-348700	A 19981208 <--
			JP 1998-348701	A 19981208 <--

AB SiC ceramics are immersed in a semiaq. org. solvent, an aq. ammonium soln., an inorg. acid aq. soln., and then pure water. The treatment with the aq. ammonium soln. may be skipped, or the order of the treatment with aq. ammonium soln. and the inorg. acid aq. soln. may be reversed. Impurities in the surface and close to the surface of the SiC ceramics can be easily removed in high efficiency.

IC ICM C04B035-565
 ICS H01L021-304
 CC 57-2 (Ceramics)
 ST **cleaning** wet silicon carbide ceramic impurity removal
 IT Petroleum hydrocarbons
 RL: NUU (Other use, unclassified); USES (Uses)
 (**cleaning** with; wet **cleaning** of SiC ceramics for removal of impurities in surface region)
 IT Glycols, uses
 Glycols, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**ethers**, **cleaning** with; wet **cleaning** of SiC ceramics for removal of impurities in surface region)
 IT **Ethers**, uses
Ethers, uses
 RL: NUU (Other use, unclassified); USES (Uses)

(glycol, cleaning with; wet cleaning of SiC
ceramics for removal of impurities in surface region)

IT **Surfactants**
(nonionic, cleaning with; wet cleaning of SiC
ceramics for removal of impurities in surface region)

IT **Acids, uses**
RL: NUU (Other use, unclassified); USES (Uses)
(org., esters, cleaning with; wet cleaning of SiC
ceramics for removal of impurities in surface region)

IT **Quaternary ammonium compounds, uses**
RL: NUU (Other use, unclassified); USES (Uses)
(tetraalkyl, halides, cleaning with; wet cleaning
of SiC ceramics for removal of impurities in surface region)

IT **Ceramics**
Cleaning
(wet cleaning of SiC ceramics for removal of impurities in
surface region)

IT **1336-21-6, Ammonium hydroxide** 7647-01-0,
Hydrochloric acid, uses 7664-39-3, Hydrofluoric acid, uses 7664-93-9,
Sulfuric acid, uses 7697-37-2, Nitric acid, uses 7722-84-1,
Hydrogen peroxide, uses 7732-18-5,
Water, uses 7790-98-9D, Ammonium perchlorate, tetraalkyl
10028-15-6, Ozone, uses
RL: NUU (Other use, unclassified); USES (Uses)
(cleaning with; wet cleaning of SiC ceramics for
removal of impurities in surface region)

IT 7429-90-5, Aluminum, processes 7439-89-6, Iron, processes 7440-02-0,
Nickel, processes 7440-09-7, Potassium, processes 7440-23-5, Sodium,
processes 7440-42-8, Boron, processes 7440-47-3, Chromium, processes
7440-50-8, Copper, processes 7440-66-6, Zinc, processes 7440-70-2,
Calcium, processes
RL: REM (Removal or disposal); PROC (Process)
(impurity; wet cleaning of SiC ceramics for removal of
impurities in surface region)

IT 409-21-2, Silicon carbide (SiC), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(wet cleaning of SiC ceramics for removal of impurities in
surface region)

IT **1336-21-6, Ammonium hydroxide**
7722-84-1, Hydrogen peroxide, uses
7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(cleaning with; wet cleaning of SiC ceramics for
removal of impurities in surface region)

L35 ANSWER 4 OF 9 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 126:200940 HCA
TITLE: Method and compositions for cleaning surface
of substrate
INVENTOR(S): Morinaga, Hitoshi; Fujisue, Masaya
PATENT ASSIGNEE(S): Mitsubishi Chemical Corporation, Japan; Morinaga,
Hitoshi; Fujisue, Masaya
SOURCE: PCT Int. Appl., 60 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 9705228	A1	19970213	WO 1996-JP2077	19960725 <--
W: KR, US				
RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 09040997	A2	19970210	JP 1995-191504	19950727 <--
JP 3198878	B2	20010813		
JP 09067688	A2	19970311	JP 1995-243859	19950830 <--
JP 09082676	A2	19970328	JP 1995-257237	19950911 <--
JP 09082677	A2	19970328	JP 1995-257238	19950911 <--
JP 09100494	A2	19970415	JP 1995-279913	19951004 <--
JP 09241612	A2	19970916	JP 1996-56087	19960313 <--
JP 3303655	B2	20020722		
EP 789071	A1	19970813	EP 1996-925074	19960725 <--
R: DE, FR, GB				
TW 401604	B	20000811	TW 1996-85109284	19960730 <--
JP 09111224	A2	19970428	JP 1996-229441	19960813 <--
JP 09157692	A2	19970617	JP 1996-281290	19961003 <--
US 5885362	A	19990323	US 1997-809147	19970514 <--
US 6228823	B1	20010508	US 1998-218000	19981222 <--
US 2002045556	A1	20020418	US 2000-749545	20001228 <--
US 6498132	B2	20021224		
PRIORITY APPLN. INFO.:			JP 1995-191504	A 19950727 <--
			JP 1995-230700	A 19950817 <--
			JP 1995-243859	A 19950830 <--
			JP 1995-257237	A 19950911 <--
			JP 1995-257238	A 19950911 <--
			JP 1995-279912	A 19951004 <--
			JP 1995-279913	A 19951004 <--
			JP 1996-56087	A 19960313 <--
			WO 1996-JP2077	W 19960725 <--
			US 1997-809147	A3 19970514 <--
			US 1998-218000	A3 19981222 <--

OTHER SOURCE(S):

MARPAT 126:200940

AB The title compns. esp. useful for **cleaning** electronic or semiconductor devices comprise a liq. medium contg. a complexing agent as a preventer for metal deposition, where the complexing agent comprise (A) complexing agents having arom. ring bearing OH or/and O- group, and/or (B) complexing agents having a N, halogen, S or/and O donor atom in the mol. or carboxylic acid groups, hydroxy mono- or dicarboxylic acid complexing agents having .ltoreq.4 OH groups and complexing agents having a carbonyl group. Thus, a **cleaning** compn. comprised a medium made up from a 30% aq. NH₃, 31% H₂O₂ and **water** at vol. ratio of 0.25:1:5, and 0.01% EDDHA, and contained only 10 ppb each of Al and Fe chloride as impurities for good **cleaning** performance.

IC ICM C11D007-04

ICS C11D007-26; H01L021-304; C23F001-32; B21B045-02

CC 46-6 (Surface Active Agents and Detergents)

Section cross-reference(s): 76

ST silicon wafer **cleaning** soln metal scavenger; chelating agent wafer **cleaning** soln; complexing agent wafer **cleaning** soln; arom chelating agent **cleaning** wafer; ammonia soln wafer **cleaning** soln; **hydrogen peroxide** wafer **cleaning**; EDDHA wafer **cleaning** soln

IT Chelating agents

(detergent compns.; method and compns. for **cleaning** surface of substrate such as silicon wafer)

IT Polyphosphoric acids

RL: TEM (Technical or engineered material use); USES (Uses)

(detergent compns.; method and compns. for **cleaning** surface of substrate such as silicon wafer)

- IT Carboxylic acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(dicarboxylic, **detergent** compns.; method and compns. for
cleaning surface of substrate such as silicon wafer)
- IT **Detergents**
Semiconductor devices
(method and compns. for **cleaning** surface of substrate such as
silicon wafer)
- IT Acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(oxo, **detergent** compns.; method and compns. for
cleaning surface of substrate such as silicon wafer)
- IT 56-40-6, Glycine, uses 60-00-4, EDTA, uses 64-19-7, Acetic acid, uses
66-71-7, o-Phenanthroline 67-63-0, Isopropyl alcohol, uses 69-72-7,
Salicylic acid, uses 75-05-8, Acetonitrile, uses 75-59-2, TMAH
87-69-4, uses 95-15-8, Benzothiophene 97-05-2, Sulfosalicylic acid
102-71-6, uses 110-85-0, **Diethylenediamine**, uses 115-41-3,
Pyrocatechol violet 120-80-9, 1,2-Benzenediol, uses 123-54-6,
Acetylacetone, uses 123-91-1, 1,4-Dioxane, uses 139-13-9,
Nitrilotriacetic acid 141-82-2, Malonic acid, uses 142-73-4,
Iminodiacetic acid 144-62-7, Ethanedioic acid, uses 148-24-3,
8-Quinolinol, uses 149-45-1, Tiron 463-79-6, Carbonic acid, uses
584-08-7, Potassium carbonate 1170-02-1, EDDHA 1336-21-6,
Ammonium hydroxide 1343-98-2, Silicic acid
1571-36-4, Stilbazo 1787-61-7, Eriochrome Black T 2050-14-8,
o,o'-Dihydroxyazobenzene 5287-25-2, Oxalic acid bis(salicylaldehyde
hydrazide) 7601-90-3, Perchloric acid, uses 7647-01-0, Hydrochloric
acid, uses 7664-38-2, Phosphoric acid, uses 7664-39-3, Hydrogen
fluoride, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid,
uses 7722-84-1, **Hydrogen peroxide**, uses
7758-09-0, Potassium nitrite 7778-80-5, Potassium **sulfate**,
uses 7782-77-6, Nitrous acid 7790-92-3, Hypochlorous acid
10043-35-3, Boric acid (H3BO3), uses 10380-08-2, Tripolyphosphoric acid
13898-47-0, Chlorous acid 26628-22-8, Sodium azide 35998-29-9, HBED
RL: TEM (Technical or engineered material use); USES (Uses)
(**detergent** compns.; method and compns. for **cleaning**
surface of substrate such as silicon wafer)
- IT 3147-14-6, Calmagite
RL: TEM (Technical or engineered material use); USES (Uses)
(method and compns. for **cleaning** surface of substrate such as
silicon wafer)
- IT 1336-21-6, **Ammonium hydroxide**
7722-84-1, **Hydrogen peroxide**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**detergent** compns.; method and compns. for **cleaning**
surface of substrate such as silicon wafer)

L35 ANSWER 5 OF 9 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 108:40149 HCA
TITLE: Method of liquid **detergents** and liquid
cosmetic agents preparation
INVENTOR(S): Haumer, Jaroslav; Lopata, Vaclav; Novak, Vaclav;
Rieger, Frantisek; Dlt, Pavel; Bares, Milan; Kepl,
Jiri; Novak, Jan; Spal, Milan
PATENT ASSIGNEE(S): Czech.
SOURCE: Czech., 6 pp.
CODEN: CZXXA9
DOCUMENT TYPE: Patent
LANGUAGE: Czech
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 238069	B1	19851113	CS 1982-9866	19821228 <--
PRIORITY APPLN. INFO.:			CS 1982-9866	19821228 <--
AB	Neutralization of the acid form of synthetic surfactants in the presence of EtOH or HOCH ₂ CH ₂ OH is accompanied by a decrease in viscosity and the evolution of heat which accelerate the process and permit continuous operation. Alkylbenzenesulfonic acid (380 kg) was treated simultaneously with EtOH 216.7, H ₂ O ₂ soln. 2.5, and aq. NH ₄ OH 140 kg/h, and the mixt. was continuously homogenized with a mixt. of Na alkyl ether sulfate 420, Na lauryl sulfate 312.5, Na sulfosuccinate 120, fatty acid diethanolamide 22.5, Na nitrilotriacetate 10, and water 860 kg/h to give a clear liq. cleaner having pH 6.			
IC	ICM C11D011-04			
CC	46-6 (Surface Active Agents and Detergents)			
ST	cleaner liq manuf acid neutralization; ethanol cleaner liq neutralization; ethylene glycol cleaner liq neutralization; alkylbenzenesulfonic neutralization liq cleaner ; ammonia neutralization alkylbenzenesulfonic cleaner			
IT	Detergents (cleaning compns., liq., alkylbenzenesulfonic acid neutralization in manuf. of)			
IT	64-17-5, Ethanol, uses and miscellaneous 107-21-1, Ethylene glycol, uses and miscellaneous RL: USES (Uses) (alkylbenzenesulfonic acid neutralization in presence of, for liq. cleaner)			

L35 ANSWER 6 OF 9 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 94:94799 HCA
 TITLE: Surface-treating agent adapted for intermediate products of a semiconductor device
 INVENTOR(S): Asano, Masafumi; Muraoka, Hisashi; Ohashi, Taizo; Shimazaki, Yuzo
 PATENT ASSIGNEE(S): Tokyo Shibaura Electric Co., Ltd., Japan
 SOURCE: U.S., 14 pp. Division of U.S. Ser. No. 718,911.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 5
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4239661	A	19801216	US 1978-927139	19780721 <--
JP 52064878	A2	19770528	JP 1975-140722	19751126 <--
JP 56053211	B4	19811217		
JP 52064871	A2	19770528	JP 1975-140725	19751126 <--
JP 53020377	B4	19780626		
JP 52064877	A2	19770528	JP 1975-140721	19751126 <--
JP 52064870	A2	19770528	JP 1975-140724	19751126 <--
JP 53020376	B4	19780626		
JP 52064876	A2	19770528	JP 1975-140723	19751126 <--
JP 53043012	B4	19781116		
US 4339340	A	19820713	US 1980-213317	19801205 <--
PRIORITY APPLN. INFO.:			JP 1975-140721	19751126 <--
			JP 1975-140722	19751126 <--

JP 1975-140723	19751126 <--
JP 1975-140724	19751126 <--
JP 1975-140725	19751126 <--
US 1976-718911	19760830 <--
JP 1976-140726	19761126 <--
JP 1975-140726	19751126 <--
US 1978-927139	19780721 <--

AB An aq. soln. contg. 0.01-20 wt.% of .gtoreq.1 trialkyl(hydroxyalkyl) **ammonium hydroxide**, where the 3 alkyl groups have 1-4 C atoms and the alkyl in the hydroxyalkyl group is an alkylene group with 2-4 C atoms, is used to **clean** the surface of an intermediate product obtained in the manuf. of semiconductor devices. The aq. soln. may contain further 0.01-10 parts by wt., based on 100 parts by wt. of the aq. soln., of .gtoreq.1 complexing agent capable of forming a H₂O -sol. complex with metals, e.g. NaCN, NH₄CN, triethanolamine. In addn., the aq. soln. may contain a nonionic **surfactant** in an amt. of 0.001-5 parts by wt. based on 100 parts by wt. soln., in particular poly(**oxyethylene**)nonylphenyl **ether**. H₂O₂, 0.003-30 parts by wt. may be present based on 100 parts by wt. of aq. soln. The solns. can be used also to remove photoresist films and etch metal (e.g. Al) layers in semiconductor technol. The use of trimethyl(2-hydroxyethyl) **ammonium hydroxide** is described in detail.

IC C11D003-26; C11D003-30; C11D007-32

NCL 252541000

CC 76-13 (Electric Phenomena)

Section cross-reference(s): 74

IT Etching

(of semiconductor devices, soln. contg. trialkyl(hydroxyalkyl) **ammonium hydroxide** for)

IT Semiconductor devices

(surface-treating agents for use in fabrication of, contg. trialkyl(hydroxyalkyl) **ammonium hydroxide**)

IT 102-71-6, uses and miscellaneous 143-33-9 7722-84-1, uses and miscellaneous 9016-45-9 12211-52-8

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(surface-treating agent contg., in fabrication of semiconductor devices)

IT 7722-84-1, uses and miscellaneous

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(surface-treating agent contg., in fabrication of semiconductor devices)

L35 ANSWER 7 OF 9 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 76:115225 HCA

TITLE: Dry **cleaning** with **hydrogen peroxide**

INVENTOR(S): Keay, Robert E.; Castrantas, Harry M.; MacKellar, Donald G.

PATENT ASSIGNEE(S): FMC Corp.

SOURCE: U.S., 4 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----

US 3635667	A	19720118	US 1970-57817	19700723 <--
DE 2133898	A	19720127	DE 1971-2133898	19710707 <--
FR 2099535	A1	19720317	FR 1971-25463	19710712 <--
BE 770008	A1	19720114	BE 1971-105919	19710714 <--
JP 51000966	B4	19760113	JP 1971-52470	19710716 <--
PRIORITY APPLN. INFO.:			US 1970-57812	19700723 <--
			US 1970-57817	19700723 <--

AB A mixt. of **hydrogen peroxide** [7722-84-1], **water**, and **ammonium hydroxide** [1336-21-6] was added to conventional drycleaning baths to improve the whiteness of fabrics without their damage. A cleaning bath contg. **perchloroethylene** 500, dodecylbenzenesulfonate isopropylamine salt 4, 50% **H2O2** 2, and 2% **NH4OH** 1 lb. cleaned cotton and cotton-Dacron blends more efficiently than similar compns. contg. no **H2O2**, **NH4OH**, and **water**.

IC D06L

NCL 008142000

CC 46 (Surface Active Agents and Detergents)

ST **hydrogen peroxide** drycleaning; **ammonium hydroxide** drycleaning; whiteness textileIT **Detergents**(dry-cleaning, contg. **ammonium hydroxide** and **hydrogen peroxide**, for improved whiteness)

IT 7722-84-1, uses and miscellaneous

RL: USES (Uses)
(**detergent** compns. contg. **ammonium hydroxide** and, for dry **cleaning** of textiles contg. cotton and Dacron with improved whiteness)

IT 1336-21-6

RL: USES (Uses)
(**detergent** compns. contg. **hydrogen peroxide** and, for dry **cleaning** of textiles contg. cotton and Dacron, with improved whiteness)

IT 7722-84-1, uses and miscellaneous

RL: USES (Uses)
(**detergent** compns. contg. **ammonium hydroxide** and, for dry **cleaning** of textiles contg. cotton and Dacron with improved whiteness)

IT 1336-21-6

RL: USES (Uses)
(**detergent** compns. contg. **hydrogen peroxide** and, for dry **cleaning** of textiles contg. cotton and Dacron, with improved whiteness)

L35 ANSWER 8 OF 9 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 64:85640 HCA

ORIGINAL REFERENCE NO.: 64:16151a-b

TITLE: Rug-**cleaning** compositions

PATENT ASSIGNEE(S): Benjamin M. Hulsh

SOURCE: 5 pp.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
US 3240713		19660315	US	19620802 <--

AB Wood flour used in the above compns. is bleached in situ by including Na

perborate (I), H₂O₂ plus NH₄OH, K₂S₂O₈, or Na₂S₂O₈ in the mixt. The compn. contains wood flour 18-35, a bleaching agent 0.20-1.0, H₂O 25-70, a low-boiling solvent 10-40, a nonionic and nonsoap org. detergent 0.25-1.0, Na₃-PO₄.12H₂O (I), Na₄P₂O₇, or K₄P₂O₇ 0.25-1.0, and, if desired, a cellulose dye 0.001-0.05%. Solvents include naphtha, mineral spirits, Stoddard solvent, CHCl₃:CCl₂ (II), CCl₄, MeCCl₃, or their mixts. Thus, a compn. contains maplewood flour 25, H₂O 38+, petroleum fraction 25, II 10, Na lauryl sulfate 0.5, Na₃PO₄ 0.4, I 0.4, and Pontamine red dye 0.01% by wt.

NCL 252139000

CC 53 (Surface-Active Agents and Detergents)

IT Carpets and Rugs

(cleaning compns. for, with in situ bleaching of wood flour)

IT Wood

(flour or meal, rug cleaning compns. contg., with in situ bleaching agent)

IT Bleaching agents

(rug cleaning compns. contg., for in situ bleaching of wood flour)

L35 ANSWER 9 OF 9 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 55:90281 HCA

ORIGINAL REFERENCE NO.: 55:17036d-h

TITLE: Flameproofing agents for cellulosic materials

INVENTOR(S): Coates, Harold

PATENT ASSIGNEE(S): Albright & Wilson Ltd.

DOCUMENT TYPE: Patent

LANGUAGE: Unavailable

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2983623		19610509	US	<--
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AB The properties of cellulose are improved by treatment with a partially polymerized hydroxymethyl phosphorous compd. contg. 1 free OH group attached to P and then exposing the cellulose in the dry state to the action of gaseous NH₃ followed by an aq. NH₄OH treatment. Thus, a tetrakis(hydroxymethyl)phosphonium chloride, (THPC)-urea precondensate (I), was prep'd. by refluxing THPC 3160 and urea 498 in H₂O 4012 parts for 30 min. with subsequent rapid cooling. To the I, a nonionic wetting agent (alkyl phenyl ethylene oxide condensation product) 20, and H₂O 5000 parts were added. A scoured and bleached cotton fabric was impregnated with this soln. and squeezed to retain 74 parts soln. per 100 parts fabric. The impregnated fabric was dried at 90-5.degree., and then exposed for 10 min. to NH₃ vapor by passing it over a NH₄OH soln. (d. 0.910). The fabric was then treated in the NH₄OH soln. (10 parts) in cold H₂O (90 parts) for 10 min. The fabric was removed from soln. and without rinsing was washed in a soln. of soap 5 and H₂O₂ (100 vol.) 2 in H₂O 1000 parts for 10 min. at 40-50, then for 10 min. at 90-5.degree. before finally being rinsed in hot H₂O, squeezed, and dried at 120.degree.. The dried fabric showed an increase of 11% in wt. compared to the original fabric. It had excellent resistance to burning and afterglow. This property was not impaired by subjecting the fabric to 10 successive 1-hr. boiling washes in a soln. of soap, 2, anhyd. Na₂CO₃ 2, and H₂O 1000 parts. Cf. U. S. 2,772,188 (CA 51, 7735c).

CC 25 (Dyes and Textiles)

IT Textiles

(fire- or flameproofing cotton, with phosphonium chloride deriv.-urea condensation products mixed with alkyl phenyl **ethylene** oxide condensate)

=> d L36 1-15 ibib abs hitind hitrn

L36 ANSWER 1 OF 15 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 139:93764 HCA
 TITLE: Method for post-etch and strip residue removal on coral films
 INVENTOR(S): Mikhaylichenko, Katrina; Ravkin, Michael; Delarios, John
 PATENT ASSIGNEE(S): Lam Research Corporation, USA
 SOURCE: PCT Int. Appl., 26 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
WO 2003058694	A1	20030717	WO 2002-US40987	20021220	
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG					

PRIORITY APPLN. INFO.: US 2001-33644 A 20011227

AB A method for **cleaning** a semiconductor **wafer** is provided which includes plasma etching a feature into a low K dielec. layer having a photoresist mask where the plasma etching generates etch residues. The method also includes ashing the semiconductor **wafer** to remove the photoresist mask where the ashing generating ashing residues. The method further includes removing the etching residues and the ashing residues from the low K dielec. layer where the removing is enhanced by **scrubbing** the low K dielec. layer of the semiconductor **wafer** with a wet brush that applies a fluid mixt. including a **cleaning** chem. and a **wetting agent**

IC ICM H01L021-20
 ICS H01L021-336
 CC 76-3 (Electric Phenomena)
 ST semiconductor **wafer** **cleaning** etch residue removal
 IT **Surfactants**
 (method for post-etch and ashing residue removal by **cleaning** with fluid mixt.)
 IT Semiconductor **device** fabrication
 (**wafer**; method for post-etch and strip residue removal on coral films)
 IT 7732-18-5, **Water**, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (deionized; method for post-etch and ashing residue removal by **cleaning** with fluid mixt.)

- IT 1336-21-6, Ammonium hydroxide
 7722-84-1, Hydrogen peroxide, processes
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (method for post-etch and ashing residue removal by **cleaning** with fluid mixt.)
- IT 7732-18-5, Water, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (deionized; method for post-etch and ashing residue removal by **cleaning** with fluid mixt.)
- IT 1336-21-6, Ammonium hydroxide
 7722-84-1, Hydrogen peroxide, processes
 RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (method for post-etch and ashing residue removal by **cleaning** with fluid mixt.)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 2 OF 15 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 136:111177 HCA
 TITLE: Evaluation of **cleaning** results for semiconductor **wafers** in semiconductor **device** fabrication
 INVENTOR(S): Ota, Katsuhiro; Takahara, Yoichi; Hara, Koji; Akimori, Hiroko; Tomioka, Hideki; Ito, Masaki; Tsugane, Masaru
 PATENT ASSIGNEE(S): Hitachi Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	JP 2002016119	A2	20020118	JP 2000-200062	20000628
PRIORITY APPLN. INFO.:				JP 2000-200062	20000628
AB Title method is based on the collection of data from a micro-groove structure (e.g., nitrides) formed on a sampling wafer , to evaluate the penetration and drying results of the cleaning soln.					
IC	ICM H01L021-66				
	ICS B08B003-04; B08B003-08; C11D007-08; C11D007-10; C11D007-18; C11D007-26; C11D007-50; C11D017-08; H01L021-3065; H01L021-304				
CC	76-3 (Electric Phenomena)				
ST	Section cross-reference(s): 46				
ST	nitride thin film sampling wafer cleaning evaluation groove structure				
IT	Surfactants (amphoteric; thin film-coated sampling wafer for evaluating cleaning result of)				
IT	Surfactants (anionic; thin film-coated sampling wafer for evaluating cleaning result of)				
IT	Surfactants (cationic; thin film-coated sampling wafer for evaluating cleaning result of)				
IT	Nitrides RL: TEM (Technical or engineered material use); USES (Uses)				

(for coating sampling **wafer** to evaluate **cleaning**
 result)

IT Solvents
 (org.; thin film-coated sampling **wafer** for evaluating
cleaning result of)

IT Acids, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (org.; thin film-coated sampling **wafer** for evaluating
cleaning result of)

IT Semiconductor materials
 (thin film-coated sampling **wafer** for evaluating
cleaning result for)

IT Semiconductor **device** fabrication
 (thin film-coated sampling **wafer** for evaluating
cleaning result in)

IT Alkali metal hydroxides
 Amines, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (thin film-coated sampling **wafer** for evaluating
cleaning result of)

IT 12033-89-5, Silicon nitride (Si₃N₄), uses 25583-20-4, Titanium nitride
 RL: TEM (Technical or engineered material use); USES (Uses)
 (for coating sampling **wafer** to evaluate **cleaning**
 result)

IT 64-19-7, Acetic acid, uses 1336-21-6, Ammonia water
 7647-01-0, Hydrochloric acid, uses 7664-39-3, Hydrofluoric acid, uses
 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses
 7722-84-1, **Hydrogen peroxide**, uses
 12125-01-8, Ammonium fluoride
 RL: NUU (Other use, unclassified); USES (Uses)
 (thin film-coated sampling **wafer** for evaluating
cleaning result of)

IT 1336-21-6, Ammonia water 7722-84-1,
Hydrogen peroxide, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (thin film-coated sampling **wafer** for evaluating
cleaning result of)

L36 ANSWER 3 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 134:65061 HCA

TITLE: Silicon **wafer** cleaning process for
 post-chemical mechanical polishing using immersion in
 chem. megasonic baths

INVENTOR(S): Hackenberg, Diana

PATENT ASSIGNEE(S): Intersil Corp., USA

SOURCE: Eur. Pat. Appl., 6 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1065708	A2	20010103	EP 2000-104706	20000303
EP 1065708	A3	20020710		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO			
US 6526995	B1	20030304	US 1999-342948	19990629
JP 2001044155	A2	20010216	JP 2000-173059	20000609

US 2003121528 A1 20030703 US 2003-358932 20030205
PRIORITY APPLN. INFO.: US 1999-342948 A 19990629

AB Silicon **wafer cleaning** process includes steps of detg.
the pH of substances on the surface of the **wafer**, adjusting the
pH of a megasonic chem. bath to match the pH of the substance, immersing
the **wafer** in a first chem. megasonic bath with a pH that matches
the pH of the substance to be removed, **cleaning** the
wafer in the megasonic bath.

IC ICM H01L021-306

CC 76-3 (Electric Phenomena)

ST silicon **wafer cleaning** chem mech polishing immersion

IT **Surfactants**
(NWC-601; silicon **wafer cleaning** process for
post-chem. mech. polishing using immersion in chem. megasonic baths)

IT Polishing
(chem.-mech.; silicon **wafer cleaning** process for
post-chem. mech. polishing using immersion in chem. megasonic baths)

IT 1336-21-6, **Ammonium hydroxide** 7647-01-0,
Hydrochloric acid, uses 7664-39-3, Hydrofluoric acid, uses 7664-93-9,
Sulfuric acid, uses 7722-84-1, **Hydrogen peroxide**, uses 116263-65-1, Ammonium peroxide
RL: NUU (Other use, unclassified); USES (Uses)
(**cleaning** soln.; silicon **wafer cleaning**
process for post-chem. mech. polishing using immersion in chem.
megasonic baths)

IT 7732-18-5, **Water**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(deionized; silicon **wafer cleaning** process for
post-chem. mech. polishing using immersion in chem. megasonic baths)

IT 37204-13-0, SC-2 136376-36-8, SC-1
RL: NUU (Other use, unclassified); USES (Uses)
(silicon **wafer cleaning** process for post-chem.
mech. polishing using immersion in chem. megasonic baths)

IT 7440-21-3, Silicon, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**wafer**; silicon **wafer cleaning** process
for post-chem. mech. polishing using immersion in chem. megasonic
baths)

IT 1336-21-6, **Ammonium hydroxide**
7722-84-1, **Hydrogen peroxide**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**cleaning** soln.; silicon **wafer cleaning**
process for post-chem. mech. polishing using immersion in chem.
megasonic baths)

IT 7732-18-5, **Water**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(deionized; silicon **wafer cleaning** process for
post-chem. mech. polishing using immersion in chem. megasonic baths)

L36 ANSWER 4 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 134:7944 HCA

TITLE: Wet-process **cleaning** and etching of copper

surfaces in electronic or semiconductor assemblies

INVENTOR(S): Verhaverbeke, Steven

PATENT ASSIGNEE(S): CFMT, Inc., USA

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000071782	A1	20001130	WO 2000-US14019	20000519
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1198620	A1	20020424	EP 2000-936165	20000519
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
JP 2003500537	T2	20030107	JP 2000-620153	20000519
PRIORITY APPLN. INFO.: US 1999-135267P P 19990521 WO 2000-US14019 W 20000519				

- AB The Cu-contg. electronic components are processed by: (a) the 1st-stage **cleaning** with aq. oxidizing soln. contg. **H₂O₂**, O₃, and/or Fe cyanide at pH .gt;req.7; (b) rinsing with low-O₂ liq.; and (c) etching with aq. acidic soln. contg. HCl, H₂SO₄, HF, H₃PO₄, AcOH, citric acid, and/or tartaric acid for pH <5, as well as low dissolved O₂ to prevent reoxidn. The 1st-stage aq. soln. preferably contains **H₂O₂** and **NH₄OH** at 1 vol. each in 5-200 vols. of **water**. The acidic etching soln. preferably contains **water**, HF, and HCl at the vol. ratio of (50-1000):1:1 and pH .lt;req.3, optionally with a **surfactant** and/or corrosion inhibitor. The Cu-coated semiconductor **wafers** were **cleaned** using the aq. soln. having the **water:H₂O₂:NH₄OH**:
surfactant vol. ratio of 100:2.2:1.3:0.25, rinsed with deionized **water**, and etched with the acidic soln. having the **water**:HF:HCl vol. ratio of 100:0.2:1 with O₂ <100 ppb. The **cleaned** Cu showed contamination particle removal of 99.9% in the 18-400 .mu.m size range, vs. only .apprx.80% without the oxidizing or acidic stage.
- IC ICM C23F003-00
ICS B08B003-00
- CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 76
- ST copper surface **cleaning** semiconductor **wafer**; oxidizing aq bath **cleaning** copper elec circuit; acidic aq bath etch **cleaning** copper surface
- IT Etching
(**cleaning** and; wet-process **cleaning** and etching of copper surfaces in electronic assemblies)
- IT Semiconductor materials
(copper-coated, **cleaning** of; wet-process **cleaning** and etching of copper surfaces in electronic assemblies)
- IT Integrated circuits
(copper-contg.; wet-process **cleaning** and etching of copper surfaces in electronic assemblies)
- IT 1336-21-6, **Ammonium hydroxide** 1948-47-6, Ferrous cyanide 7722-84-1, **Hydrogen peroxide**, uses 10028-15-6, Ozone, uses RL: MOA (Modifier or additive use); USES (Uses)
(**cleaning** bath contg.; wet-process **cleaning** and etching of copper surfaces in electronic assemblies)
- IT 7440-50-8, Copper, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (cleaning of; wet-process **cleaning** and etching of
 copper surfaces in electronic assemblies)

IT 64-19-7, Acetic acid, uses 77-92-9, Citric acid, uses 87-69-4,
 Tartaric acid, uses 7647-01-0, Hydrochloric acid, uses 7664-38-2,
 Phosphoric acid, uses 7664-39-3, Hydrofluoric acid, uses 7664-93-9,
 Sulfuric acid, uses

RL: MOA (Modifier or additive use); USES (Uses)
 (etch **cleaning** bath contg.; wet-process **cleaning**
 and etching of copper surfaces in electronic assemblies)

IT 7440-21-3, Silicon, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (semiconductor **wafers**, copper-coated; wet-process
cleaning and etching of copper surface on semiconductor
wafers)

IT 1336-21-6, Ammonium hydroxide
 7722-84-1, Hydrogen peroxide, uses

RL: MOA (Modifier or additive use); USES (Uses)
 (cleaning bath contg.; wet-process **cleaning** and
 etching of copper surfaces in electronic assemblies)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 5 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 133:275225 HCA

TITLE: Method for **cleaning** silicon **wafers**
 with deep trenches in semiconductor device
 fabrication

INVENTOR(S): Lee, Kuei-Ying; Tao, Hun-Jan; Tsai, Chia-Shiung

PATENT ASSIGNEE(S): Taiwan Semiconductor Manfacturing Company, Taiwan

SOURCE: U.S., 8 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6129091	A	20001010	US 1996-725804	19961004
PRIORITY APPLN. INFO.:			US 1996-725804	19961004

AB Current aq. methods for removal of polymeric materials from the sidewalls of trenches etched into silicon **wafers** by reactive-ion-etching are inadequate for treating deep trenches having high aspect ratios. Spin-dry operations performed after the aq. etching are incapable of completely removing rinse **water** and ionic species from these deep trenches, thereby leaving pockets of liq. Subsequent evapn. of these pockets results in the concn. and eventual pptn. of residual ionic species creating watermarks. A two-stage **cleaning** method is described in which the first stage dissolves the sidewall polymer and the second stage draws ionic species strongly chemisorbed onto the silicon surfaces into soln. A key feature of the method is that the **wafer** surface is not permitted to dry until after the final rinse. The method includes treating RIE etched silicon **wafer** with 1st soln. contg. hydrofluoric acid and a **surfactant**, rinsing with deionized **water**, immersing in 2nd soln. contg. H₂O₂ and NH₄OH, rinsing with deionized **water**, and then drying.

IC ICM B08B003-08

ICS B08B003-12

NCL 134003000

CC 76-3 (Electric Phenomena)
ST cleaning silicon **wafers** deep trench; semiconductor
device fabrication silicon **wafers** cleaning;
DRAM deep trench silicon **wafers** cleaning
IT Memory devices
(DRAM (dynamic random access), fabrication of; **cleaning** of
silicon **wafers** with deep trenches in semiconductor
device fabrication)
IT Cleaning
Semiconductor device fabrication
(**cleaning** of silicon **wafers** with deep trenches in
semiconductor device fabrication)
IT MOS devices
(complementary, fabrication; **cleaning** of silicon
wafers with deep trenches in semiconductor device
fabrication)
IT Sputtering
Sputtering
(etching, reactive, **cleaning** after; **cleaning** of
silicon **wafers** with deep trenches in semiconductor
device fabrication)
IT Washing
(rinsing; **cleaning** of silicon **wafers** with deep
trenches in semiconductor device fabrication)
IT Surfactants
(soln. contg.; **cleaning** of silicon **wafers** with deep
trenches in semiconductor device fabrication)
IT Etching
Etching
(sputter, reactive, **cleaning** after; **cleaning** of
silicon **wafers** with deep trenches in semiconductor
device fabrication)
IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(deionized, for rinsing; **cleaning** of silicon **wafers**
with deep trenches in semiconductor device fabrication)
IT 1336-21-6, Ammonium hydroxide ((NH₄)
(OH)) 7664-39-3, Hydrofluoric acid, uses 7722-84-1,
Hydrogen peroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(soln. contg.; **cleaning** of silicon **wafers** with deep
trenches in semiconductor device fabrication)
IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(**wafers**; **cleaning** of silicon **wafers** with
deep trenches in semiconductor device fabrication)
IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(deionized, for rinsing; **cleaning** of silicon **wafers**
with deep trenches in semiconductor device fabrication)
IT 1336-21-6, Ammonium hydroxide ((NH₄)
(OH)) 7722-84-1, Hydrogen peroxide
, uses
RL: NUU (Other use, unclassified); USES (Uses)
(soln. contg.; **cleaning** of silicon **wafers** with deep
trenches in semiconductor device fabrication)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L36 ANSWER 6 OF 15 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 132:86406 HCA
 TITLE: The effect of **surfactants** in NH₄OH
 on silicon surfaces and particles removal
 AUTHOR(S): Park, Jin-Woo; Park, Jin-Goo; Kim, Ki-Sub; Song,
 Hyung-Soo
 CORPORATE SOURCE: Dep. Metall. Materials Eng., Hanyang Univ., Ansan,
 425-791, Peop. Rep. China
 SOURCE: Han'guk Chaelyo Hakhoechi (1999), 9(9), 872-877
 CODEN: HCHAEU; ISSN: 1225-0562
 PUBLISHER: Materials Research Society of Korea
 DOCUMENT TYPE: Journal
 LANGUAGE: Korean
 AB The purpose of this research was to study the characteristics and the
 cleaning efficiency of NH₄OH solns. added with
 H₂O₂ and **surfactants**. NH₄OH solns. added with
surfactants did not show much changes in pH and redox potential
(Eh) as a function of NH₄OH concn. compared with NH₄OH
increased. The decrease of surface tension from 72 dynes/cm to 38
dynes/cm was obsd. in solns. added with **surfactant** but not in
H₂O₂ and **surfactant** added NH₂OH solns. SC1(
NH₄OH:H₂O = 1:1:5) soln. removed the PSL particles (0.
67.mu.m in diam.) on Si **wafers** effectively at all temps.
studied. NH₄OH soln. added with a **surfactant** could
not remove particles at room temp., however it was possible to remove
particles at higher temps., 50.degree. and 80.degree..

CC 76-3 (Electric Phenomena)

ST **surfactant ammonia cleaning silicon**
 IT **Cleaning**

Surface tension

Surfactants

(effect of **surfactants** in ammonium
hydroxide on silicon surfaces and particles removal)

IT 7440-21-3, Silicon, processes

RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)

(effect of **surfactants** in ammonium
hydroxide on silicon surfaces and particles removal)

IT 9003-53-6, Polystyrene

RL: REM (Removal or disposal); PROC (Process)
(effect of **surfactants** in ammonium
hydroxide on silicon surfaces and particles removal)

IT 1336-21-6, Ammonium hydroxide ((NH₄
)(OH)) 7722-84-1, Hydrogen peroxide

, uses 119978-24-4, NCW601A

RL: TEM (Technical or engineered material use); USES (Uses)

(effect of **surfactants** in ammonium
hydroxide on silicon surfaces and particles removal)

IT 1336-21-6, Ammonium hydroxide ((NH₄
)(OH)) 7722-84-1, Hydrogen peroxide

, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(effect of **surfactants** in ammonium
hydroxide on silicon surfaces and particles removal)

IT 1336-21-6, Ammonium hydroxide ((NH₄
)(OH)) 7722-84-1, Hydrogen peroxide

, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(effect of **surfactants** in ammonium
hydroxide on silicon surfaces and particles removal)

L36 ANSWER 7 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 127:178012 HCA

TITLE: Semiconductor **wafer** cleaning
system

INVENTOR(S): Olesen, Michael B.; Bran, Mario E.

PATENT ASSIGNEE(S): Verteq, Inc., USA
 SOURCE: U.S., 25 pp., Cont.-in-part of U.S. Ser. No. 140,290,
 abandoned.
 CODEN: USXXAM
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5656097	A	19970812	US 1994-361139	19941221
US 5908509	A	19990601	US 1997-908330	19970807
US 5996595	A	19991207	US 1997-908345	19970807
US 6158445	A	20001212	US 1999-358568	19990720
US 6378534	B1	20020430	US 2000-694938	20001023
PRIORITY APPLN. INFO.:			US 1993-140290	B2 19931020
			US 1994-361139	A3 19941221
			US 1997-910033	A3 19970811
			US 1999-358568	A1 19990720

AB Semiconductor wafers are positioned in a single cleaning tank and subjected to sequential flows of .gtoreq.1 highly dild. cleaning solns. that are injected from the lower end of the tank and allowed to overflow at the upper end, followed by rinse water after the dil. cleaning soln. is dumped. One soln. contains 1 part NH4OH, 2 parts H2O2, and 300-600 parts deionized H2O, and a trace of high purity surfactant. A second soln. contains highly dil. HF. A third soln. of H2O2 is more dil. than the first soln. A fourth soln. contains HCl greatly dild. with deionized H2O. Quick dump valves in the tank bottom enable the solns. to be quickly dumped followed by .gtoreq.1 rinse steps, including a quick refill while spraying and then dumping of the rinsing H2O. Cleaning is assisted by application of megasonic energy.

IC ICM B08B003-08

ICS B08B003-12; B08B007-02; C23G001-02

NCL 134001000

CC 46-6 (Surface Active Agents and Detergents)

Section cross-reference(s): 76

ST cleaning solvent semiconductor wafer; ammonium hydroxide cleaning solvent; hydrofluoric acid cleaning solvent; hydrochloric acid cleaning solvent; hydrogen peroxide cleaning solvent; sonic vibration cleaning semiconductor wafer

IT Cleaning
 (megasonic; semiconductor wafer cleaning system using multiple flows of very dil. solvents and sonication)

IT Cleaning solvents
 (semiconductor wafer cleaning system using multiple flows of very dil. solvents and sonication)

IT Semiconductor materials
 (wafer; semiconductor wafer cleaning system using multiple flows of very dil. solvents and sonication)

IT 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 7647-01-0, Hydrochloric acid, uses 7664-39-3, Hydrofluoric acid, uses 7722-84-1, Hydrogen peroxide, uses

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (semiconductor wafer cleaning system using multiple flows of very dil. solvents and sonication)

IT 1336-21-6, Ammonium hydroxide ((NH₄)(OH)) 7722-84-1, Hydrogen peroxide
, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)
(semiconductor wafer cleaning system using multiple
flows of very dil. solvents and sonication)

L36 ANSWER 8 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 125:46159 HCA
TITLE: Proposal of advanced wet cleaning of silicon
surface

AUTHOR(S): Ohmi, Tadahiro

CORPORATE SOURCE: Dep. Electron., Tohoku Univ., Sendai, 980, Japan

SOURCE: Proceedings - Electrochemical Society (1996),
95-20(Cleaning Technology in Semiconductor Device
Manufacturing), 1-12

CODEN: PESODO; ISSN: 0161-6374

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Ultraclean wafer surface is crucial for high quality processing
in Si technologies. Cleaning of Si wafer surface was
provided by RCA wet cleaning for this quarter century, where
there exist high temp. processes consisting of H₂SO₄/H₂O₂/
H₂O, NH₄OH/H₂O₂/H₂O and HCl/
H₂O₂/H₂O treatment. Thus, RCA cleaning
requires a large no. of processing steps, resulting in requirements of
huge consumption vol. of liq. chems. and ultrapure H₂O, and
simultaneously huge vol. of clean air exhaust to suppress chem.
vapor getting into clean room. Total room temp. wet
cleaning consisting of five cleaning steps was developed
for Si wafer surface, where consumption vol. of liq. chems. and
ultrapure H₂O was reduced dramatically <1/20 compared to that of
RCA cleaning. The newly developed cleaning technol.
was confirmed to contribute to future simplified and low cost manufg. of
ULSI.

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 48, 66, 67

ST cleaning silicon distd water hydrogen fluoride

IT Semiconductor devices

Sound and Ultrasound

Surfactants

(five-step wet-cleaning process for silicon wafers
with low consumption of liq. chems. and ultrapure water)

IT Particles

(removal of; five-step wet-cleaning process for silicon
wafers with low consumption of liq. chems. and ultrapure
water)

IT 7664-39-3, Hydrogen fluoride, processes 7722-84-1,

Hydrogen peroxide, processes 7732-18-5,

Water, processes 10028-15-6, Ozone, processes

RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)

(five-step wet-cleaning process for silicon wafers
with low consumption of liq. chems. and ultrapure water)

IT 7440-21-3, Silicon, processes

RL: PEP (Physical, engineering or chemical process); TEM (Technical or
engineered material use); PROC (Process); USES (Uses)

(five-step wet-cleaning process for silicon wafers

- with low consumption of liq. chems. and ultrapure water)
IT 7440-22-4, Silver, processes 7440-50-8, Copper, processes
RL: REM (Removal or disposal); PROC (Process)
(five-step wet-cleaning process for silicon wafers
with low consumption of liq. chems. and ultrapure water)
IT 7722-84-1, Hydrogen peroxide, processes
7732-18-5, Water, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(five-step wet-cleaning process for silicon wafers
with low consumption of liq. chems. and ultrapure water)

L36 ANSWER 9 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 124:264105 HCA
TITLE: Cleaning of semiconductor devices
INVENTOR(S): Kawahara, Hiroyuki
PATENT ASSIGNEE(S): Matsushita Electronics Corp, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08017775	A2	19960119	JP 1994-146266	19940628
PRIORITY APPLN. INFO.: JP 1994-146266 19940628				
AB Solns. for cleaning at 65-75.degree. contain 0.6-1.5% NH4OH, 2-2.5% H2O2, and H2O.				
IC ICM H01L021-304	ICS C11D007-04; C11D007-06; C11D007-18; H01L021-308			
CC 46-6 (Surface Active Agents and Detergents)	Section cross-reference(s): 76			
ST cleaning silicon wafer; ammonium hydroxide cleaning soln; hydrogen peroxide cleaning soln				
IT Semiconductor devices (silicon wafers; cleaning solns. contg. ammonium hydroxide and hydrogen peroxide for semiconductor devices)				
IT Detergents (cleaning compns., cleaning solns. contg. ammonium hydroxide and hydrogen peroxide for semiconductor devices)				
IT 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 7722-84-1, Hydrogen peroxide, uses	RL: TEM (Technical or engineered material use); USES (Uses)			
	(cleaning solns. contg. ammonium hydroxide and hydrogen peroxide for semiconductor devices)			
IT 7440-21-3, Silicon, uses	RL: DEV (Device component use); USES (Uses)			
	(wafers; cleaning solns. contg. ammonium hydroxide and hydrogen peroxide for semiconductor devices)			
IT 1336-21-6, Ammonium hydroxide ((NH4)(OH)) 7722-84-1, Hydrogen peroxide, uses				

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RL: TEM (Technical or engineered material use); USES (Uses)
 (cleaning solns. contg. ammonium hydroxide
 and hydrogen peroxide for semiconductor
 devices)

L36 ANSWER 10 OF 15 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 122:202039 HCA
 TITLE: The wet process technology in the semiconductor
 manufacturing process. Advanced wet cleaning
 technology
 AUTHOR(S): Ohmi, Tadahiro
 CORPORATE SOURCE: Fac. Eng., Tohoku Univ., Sendai, 980-77, Japan
 SOURCE: Denki Kagaku oyobi Kogyo Butsuri Kagaku (1995), 63(3),
 184-8
 CODEN: DKOKAZ; ISSN: 0366-9297
 DOCUMENT TYPE: Journal; General Review
 LANGUAGE: Japanese
 AB A review, with 6 refs., on **cleaning of silicon wafers**
 with **NH4OH-H2O2-H2O-surfactant** or
 O3-contg. pure **water**.
 CC 76-0 (Electric Phenomena)
 ST review silicon wafer cleaning semiconductor
 IT Semiconductor devices
Surfactants
 (**cleaning** of silicon **wafer** in manuf. of
 semiconductor **device**)
 IT 7440-21-3, Silicon, processes
 RL: DEV (Device component use); PEP (Physical, engineering or chemical
 process); PROC (Process); USES (Uses)
 (**cleaning** of silicon **wafer** in manuf. of
 semiconductor **device**)
 IT 1336-21-6, Ammonium hydroxide
 7722-84-1, Hydrogen peroxide, uses
 10028-15-6, Ozone, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**cleaning** of silicon **wafer** in manuf. of
 semiconductor **device**)
 IT 1336-21-6, Ammonium hydroxide
 7722-84-1, Hydrogen peroxide, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (**cleaning** of silicon **wafer** in manuf. of
 semiconductor **device**)

L36 ANSWER 11 OF 15 HCA COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 121:159790 HCA
 TITLE: Dilute ammonia-hydrogen peroxide
 solution detergents for particle removal
 from **wafers**
 INVENTOR(S): Kokubu, Katsunori
 PATENT ASSIGNEE(S): Sony Corp, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
JP 06112179	A2	19940422	JP 1992-261270	19920930

PRIORITY APPLN. INFO.: JP 1992-261270 19920930

AB The title detergents contain ammonium hydroxide, aq. hydrogen peroxide, and pure water with the pure water content 20-100 times the overall vol. of ammonium hydroxide and aq. hydrogen peroxide.

IC ICM H01L021-304
ICS C11D007-18

CC 46-6 (Surface Active Agents and Detergents)
Section cross-reference(s): 76

ST particle removal wafer ammonium hydroxide; hydrogen peroxide particle removal wafer

IT Semiconductor devices
(manuf. of, wafer cleaning in, dil. ammonia-hydrogen peroxide for)

IT Detergents
(cleaning compns., dil. ammonia-hydrogen peroxide, for particle removal from wafers)

IT 7722-84-1, Hydrogen peroxide, uses
RL: USES (Uses)
(dil. soln. contg. ammonium hydroxide and, for particle removal from wafers)

IT 1336-21-6, Ammonium hydroxide
RL: USES (Uses)
(dil. soln. contg. hydrogen peroxide and, for particle removal from wafers)

IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(wafer, particle removal from, dil. ammonia-hydrogen peroxide solns. for)

IT 7722-84-1, Hydrogen peroxide, uses
RL: USES (Uses)
(dil. soln. contg. ammonium hydroxide and, for particle removal from wafers)

IT 1336-21-6, Ammonium hydroxide
RL: USES (Uses)
(dil. soln. contg. hydrogen peroxide and, for particle removal from wafers)

L36 ANSWER 12 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 120:336073 HCA

TITLE: Improved wet chemical cleaning for realization of ultraclean wafer surface

AUTHOR(S): Ohmi, Tadahiro; Imaoka, Takashi; Takano, Jun;
Kunimoto, Fumitomo

CORPORATE SOURCE: Dep. Elec., Tohoku Univ., Sendai, 980, Japan

SOURCE: Particulate Science and Technology (1993), 11(3-4),
229-43
CODEN: PTCHDS; ISSN: 0272-6351

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The improved wet cleaning process is described.. Several new technologies are incorporated in this process. The ozone-added ultrapure water rinsing technol. (O₃-H₂O) has made it possible to completely remove trace org. mols. adsorbed on the wafer surface at room temp. The optimal compn. of the NH₄OH-H₂O₂-H₂O soln. has been found to maximize the particle removal efficiency without increasing surface microroughness at all. The DHF-H₂O₂ cleaning technol. is very effective in removing metals such as Cu that take electrons from Si to directly bind with the Si

surface. This **cleaning** technol. is also effective in removing native oxide. The technol. to terminate the Si surface with hydrogen is also employed. Hot ultrapure water is used for this purpose.

CC 76-3 (Electric Phenomena)

ST silicon wafer cleaning ammonia hydrofluoric acid; hydrogen peroxide copper impurity cleaning; diode breakdown silicon cleaning ozone

IT Electric breakdown
(of silicon, wet **cleaning** process effect on)

IT **Surfactants**
(removal of, from silicon, wet **cleaning** process for)

IT Diodes
(silicon-based, characteristics of, wet **cleaning** process effect on)

IT Electric resistance
(contact, of aluminum on silicon, wet **cleaning** process effect on)

IT 7429-90-5, Aluminum, properties
RL: PRP (Properties)
(contact resistance of, on silicon, wet **cleaning** process effect on)

IT 7440-50-8, Copper, miscellaneous
RL: MSC (Miscellaneous)
(removal of impurities of, from silicon surface, wet **cleaning** process for)

IT 7440-21-3, Silicon, uses
RL: USES (Uses)
(wet chem. process of **cleaning** of, diode characteristics in relation to)

IT 7727-37-9, Nitrogen, uses
RL: USES (Uses)
(wet **cleaning** process of silicon wafers sealed under)

IT 7647-01-0, Hydrochloric acid, uses 7664-39-3, Hydrofluoric acid, uses 7664-41-7, Ammonia, uses 7722-84-1, Hydrogen peroxide, uses 10028-15-6, Ozone, uses
RL: USES (Uses)
(wet **cleaning** using, of silicon surface, diode breakdown in relation to)

IT 7722-84-1, Hydrogen peroxide, uses
RL: USES (Uses)
(wet **cleaning** using, of silicon surface, diode breakdown in relation to)

L36 ANSWER 13 OF 15 HCA COPYRIGHT 2003 ACS on STN
ACCESSION NUMBER: 118:203330 HCA
TITLE: Segregation and removal of metallic impurity at interface of silicon and fluorine etchant
AUTHOR(S): Ohmi, Tadahiro; Imaoka, Takashi; Kezuka, Takehiko; Takano, Jun; Kogure, Masahiko
CORPORATE SOURCE: Dep. Electron., Tohoku Univ., Sendai, 980, Japan
SOURCE: Journal of the Electrochemical Society (1993), 140(3), 811-18
CODEN: JESOAN; ISSN: 0013-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The segregation and removal of metallic impurities were studied at the solid/liq. interface between chems. and various Si wafer surfaces (p, n, p, n+). Several impurities employed in the process were studied for the removal of oxide from Si surface. Metals featuring high

electronegativity (such as Cu) are directly adsorbed on the bare Si surface while taking electrons away from the Si surface. These metals are hard to remove. Cu was used as the representative of metals to be directly adsorbed on the bare Si surface and studied its segregation and removal at the solid/liq. interface between Si **wafer** and impurities to keep the Si surface bare such as DHF, DHF-H₂O₂, and BHF. Cu ion in DHF adheres on every Si **wafer** surface that were used in the study (p, n, p+, n+), esp. on the n+-Si surface. The DHF-H₂O₂ soln. is effective in removing metals featuring high electronegativity such as Cu from the p-Si and n-Si **wafers**. Even when the DHF-H₂O₂ soln. has Cu ions at the concn. of 1 ppm, this soln. is effective in **cleaning** the **wafer**. In the case of the n+-Si and p+-Si **wafers**, however, their surfaces get contaminated with Cu when Cu ion of 10 ppb remains in the DHF-H₂O₂ soln. When BHF is used, Cu in BHF is more likely to contaminate the p-Si, n-Si, and p+-Si **wafers** but is less likely to contaminate the n+-Si **wafer**. The **surfactant** added to BHF to improve its wettability onto the Si **wafer** is effective in preventing Cu pptn. onto the p-Si, n-Si, and p+-Si **wafers**. This effect of the **surfactant**, however, is not obsd. on the n+-Si **wafer**. The surface microroughness on the n+-Si **wafer** is increased when it is immersed in the DHF-H₂O₂ soln. for 10 min. The etch rate of DHF-H₂O₂ and BHF on the n+-Si **wafer** is much higher than that on the other Si **wafers**. To suppress the metallic contamination on every type of Si surface <1 .times. 10¹⁰ atom/cm², the metallic concn. in ultrapure H₂O and high-purity DHF which is employed at the final stage of the **cleaning** process must be lowered below the part per trillionlevel. DHF-H₂O₂ **cleaning** is effective in removing metallic impurities on the p and n surfaces which are required to feature extremely high **cleanliness** level, such as the **wafer** surface before gate oxidn. The DHF-H₂O₂ soln., however, degrades surface roughness on the **substrate** with the n+ and p+ surfaces. To remove metallic impurities on these surfaces, there is no choice at present but to use the NH₄OH-H₂O₂-H₂O **cleaning** and the HCl-H₂O₂-H₂O **cleaning**.

- CC 76-14 (Electric Phenomena)
Section cross-reference(s): 66, 67
- ST copper impurity segregation removal silicon interface; metallic impurity segregation silicon interface etchant; silicon **wafer** **cleaning** DHF peroxide soln
- IT 1336-21-6, Ammonium hydroxide
RL: USES (Uses)
(segregation and removal of metallic impurity from interface of silicon with, in **cleaning** process)
- IT 7664-39-3, Hydrofluoric acid, properties 7722-84-1,
Hydrogen peroxide, properties
RL: PRP (Properties)
(segregation and removal of metallic impurity from interface of silicon with, in **cleaning** process)
- IT 1336-21-6, Ammonium hydroxide
RL: USES (Uses)
(segregation and removal of metallic impurity from interface of silicon with, in **cleaning** process)
- IT 7722-84-1, Hydrogen peroxide, properties
RL: PRP (Properties)
(segregation and removal of metallic impurity from interface of silicon with, in **cleaning** process)

ACCESSION NUMBER: 115:292796 HCA
 TITLE: Preventing metallic contamination of semiconductor devices
 INVENTOR(S): Tateno, Toshio; Kawasawa, Yoshio; Okada, Tomokatsu
 PATENT ASSIGNEE(S): Morita Kagaku Kogyo Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 03053083	A2	19910307	JP 1989-189518	19890720
PRIORITY APPLN. INFO.:			JP 1989-189518	19890720
AB	The process uses a mixed aq. soln. from .gtoreq.2 of HF, aq. NH4F, H2O4, NH4OH, H2SO4, HCl, HNO3, alc., and pure H2O, for cleaning semiconductor devices or for etching, which contains a 1-50-ppm anionic surfactant(s) from CxHyCOOH, CxHySO3H, CxFyCOOH, CxFySO3H, (x = 4-7 integer; and y = 9-15 integer), or its salt.			
IC	ICM C23F001-24 ICS H01L021-304; H01L021-308			
CC	76-3 (Electric Phenomena)			
ST	semiconductor device metallic contamination prevention			
IT	Alcohols, uses and miscellaneous RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (aq. solns. of, contg. surfactants for preventing metallic contamination of semiconductor devices)			
IT	Semiconductor devices (metallic-contamination prevention of, aq. solns. contg. anionic surfactants for)			
IT	Surfactants (anionic, aq. solns. contg., for preventing metallic contamination of semiconductor devices)			
IT	111-14-8, Heptanoic acid 1-Heptanesulfonic acid	307-24-4	375-85-9	60586-80-3,
	RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (aq. solns. contg., for preventing metallic-contamination of semiconductor devices)			
IT	7647-01-0, Hydrochloric acid, uses and miscellaneous Hydrofluoric acid, uses and miscellaneous miscellaneous 7664-93-9, Sulfuric acid, uses and miscellaneous 7697-37-2, Nitric acid, uses and miscellaneous 7722-84-1, Hydrogen peroxide , uses and miscellaneous 12125-01-8, Ammonium fluoride (NH4F)		7664-39-3, 7664-41-7, Ammonia, uses and 7722-84-1,	
	RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (aq. solns. of, contg. surfactants for preventing metallic contamination of semiconductor devices)			
IT	7732-18-5, Water , uses and miscellaneous			
	RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses) (surfactant-contg., for preventing metallic contamination of semiconductor devices)			
IT	7722-84-1, Hydrogen peroxide , uses and miscellaneous			

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (aq. solns. of, contg. **surfactants** for preventing metallic contamination of semiconductor devices)

IT 7732-18-5, Water, uses and miscellaneous
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (**surfactant-contg.**, for preventing metallic contamination of semiconductor devices)

L36 ANSWER 15 OF 15 HCA COPYRIGHT 2003 ACS on STN

ACCESSION NUMBER: 72:84930 HCA
 TITLE: Chromium patterns by photogravure
 INVENTOR(S): Cashau, George R.; George, James W.
 PATENT ASSIGNEE(S): Western Electric Co., Inc.
 SOURCE: Fr., 7 pp.
 CODEN: FRXXAK
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 1576139	A	19690725	FR 1968-1576139	19680805
US 3542612	A	19701124	US 1967-659896	19670811
PRIORITY APPLN. INFO.:			US 1967-659896	19670811

AB For practically pinhole-free, long-lasting patterns for high precision work, such as semiconductor devices and integrated circuits, soda-lime glass is boiled in an inorg. caustic detergent, then in H₂O₂, rinsed with deionized water, and dried 30 min at 120.degree.. A 50-nm layer of Cr is vacuum-deposited and blown with an air jet (4.22 kg/cm²) to remove any loose Cr. The loosened Cr particles are believed to carry with them the impurities on the glass surface interfering with the adhesion of the metal, so that a 2nd 50-nm Cr coating results in a pinhole-free layer of Cr. A photoresist is applied and the bared Cr etched with H₂SO₄-H₃PO₄. The etch action is stopped by immersion in NH₄OH, the resist removed, and the Cr pattern cleaned with NaOH.

IC G03F
 CC 74 (Radiation Chemistry, Photochemistry, and Photographic Processes)

=> d L41 1-11 cbib abs hitind hitrn

L41 ANSWER 1 OF 11 HCA COPYRIGHT 2003 ACS on STN
 132:323339 Textile spot and stain remover composition and preparation therefor. Whiteley, Reginald Keith; Whiteley, Bruce Alan (Australia). Pat. Specif. (Aust.) AU 711246 B2 19991007, 25 pp. (English). CODEN: ALXXAP. APPLICATION: AU 1995-20140 19950518. PRIORITY: AU 1994-5759 19940523.

AB The heavy duty spot and stain remover of the present invention is an aq. **cleansing** compn. comprising: (a) an anionic or nonionic **surfactant** suitable for use on dyed textile fibers, in an amt. of from 0.05-2.5 wt.% of the compn.; (b) a polar solvent or mixt. of solvents comprising a glycol contg. 5 to 13 carbon atoms and/or an alc. contg. 6 or more carbon atoms; (c) an effective quantity of active peroxyhydrate oxidizing agent, suitable for use on dyed textile fibers; (d) a transition metal present in the form of an aq. ammonium complex in an amt. of 2.5-200 ppm of metal; (e) a **water** sol. resin selected from the group

consisting of styrene maleic anhydrides, styrene acrylic anhydrides, polyacrylic resins, and derivs. thereof in an amt. of 0.10-5.0 wt.% of dry resin in the compn.; and (f) sufficient ammonium hydroxide to raise the pH of the soln. to between 7.0 and 12.5. The cleansing compn. provides a simple and effective improvement on current methods of removing spots and stains from textile fabrics.

- IC ICM C11D001-14
ICS C11D001-66; C11D001-83; C11D003-44; C11D003-39; C11D003-37
CC 46-6 (Surface Active Agents and Detergents)
Section cross-reference(s): 43
ST textile stain spot cleansing compn prep; surfactant solvent oxidant metal ammonia cleaner
IT Surfactants
(anionic, sodium laurylsulfate; prep. of textile spot and stain remover comprising)
IT Surfactants
(nonionic; prep. of textile spot and stain remover comprising)
IT Detergents
(stain removers; prep. of textile spot and stain remover)
IT Polymers, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(water-sol., SMA 17352; prep. of textile spot and stain remover comprising)
IT 151-21-3, Sodium lauryl sulphate, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(anionic surfactant; prep. of textile spot and stain remover comprising)
IT 1313-60-6, Sodium peroxide 3313-92-6, Sodium percarbonate
7722-84-1, Hydrogen peroxide, uses
7775-27-1, Sodium persulfate 15630-89-4 18278-90-5, Sodium peroxydiphosphate
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(oxidant; prep. of textile spot and stain remover comprising)
IT 60800-81-9, SMA 17352
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(water-sol. polymer; prep. of textile spot and stain remover comprising)
IT 7722-84-1, Hydrogen peroxide, uses
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(oxidant; prep. of textile spot and stain remover comprising)

L41 ANSWER 2 OF 11 HCA COPYRIGHT 2003 ACS on STN
127:102570 Particle deposition and removal in wet cleaning processes for semiconductor manufacturing. Itano, M.; Kezuka, T.; Kubo, M.; Ohmi, T. (DAIKIN INDUSTRIES LTD., Settsu, Japan). Semiconductor Pure Water and Chemicals Conference, 15th (UPW & Chemical Proceedings, 1996), 257-287 (English) 1996. CODEN: SPWCFI. Publisher: Balazs Analytical Laboratory.

AB It is demonstrated that the room temp. NH₄OH-H₂O₂-H₂O soln. has almost the same ability to remove particles as the high temp. NH₄OH-H₂O₂-H₂O soln. This was achieved by increasing the NH₄OH content in the NH₄OH-H₂O₂-H₂O to around the ratio of 2:1:5 to 10:1:5. In addn., the dild. HF soln. with an anionic surfactant is essentials to maintain sufficient particle removal efficiency in the room

temp. NH₄OH-H₂O₂-H₂O cleaning process.
CC 76-3 (Electric Phenomena)
ST particle removal wet **cleaning** semiconductor manufg;
ammonium hydroxide wet **cleaning** semiconductor
manufg; hydrogen peroxide wet **cleaning**
semiconductor manufg
IT **Cleaning**
Particles
Semiconductor materials
(particle deposition and removal in wet **cleaning** with
NH₄OH-H₂O₂-H₂O soln. for semiconductor
manufg.)
IT 1336-21-6, Ammonium hydroxide
7722-84-1, Hydrogen peroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(particle deposition and removal in wet **cleaning** with
NH₄OH-H₂O₂-H₂O soln. for semiconductor
manufg.)
IT 1336-21-6, Ammonium hydroxide
7722-84-1, Hydrogen peroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(particle deposition and removal in wet **cleaning** with
NH₄OH-H₂O₂-H₂O soln. for semiconductor
manufg.)

L41 ANSWER 3 OF 11 HCA COPYRIGHT 2003 ACS on STN
123:290419 SC-1 **cleaning** with low surface-tension ammonia
water. Mori, Kiyota; Ishikawa, Norio; Shihoya, Takao; Yamashita,
Asaaki (Kanto Chemical Co., Inc., Japan). Semiconductor Pure Water and
Chemicals Conference, 12th, 122-43 (English) 1993. CODEN:
SPWCFI. ISSN: 1521-4656.

AB A discussion of effectiveness of **cleaning** solns. contg. ammonia
water, H₂O₂, and deionized water; the soln. is
used to remove dust, polystyrene latex, and silica.

CC 46-3 (Surface Active Agents and Detergents)
ST ammonia hydrogen peroxide **cleaning** soln
IT **Detergents**

(**cleaning** compns., effectiveness of SC-1 **cleaning**
soln. contg. ammonia **water** and **hydrogen**
peroxide)

IT 1336-21-6, Ammonium hydroxide
7722-84-1, Hydrogen peroxide, uses
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(effectiveness of SC-1 **cleaning** soln. contg. ammonia
water and hydrogen peroxide)

IT 1336-21-6, Ammonium hydroxide
7722-84-1, Hydrogen peroxide, uses
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(effectiveness of SC-1 **cleaning** soln. contg. ammonia
water and hydrogen peroxide)

L41 ANSWER 4 OF 11 HCA COPYRIGHT 2003 ACS on STN
116:217395 .eta.leanings of silicon plates. Jankech, Dominik; Haban, Ivan;
Drgac, Lubomir (Czech.). Czech. CS 270880 B1 19910704, 2 pp.
(Slovak). CODEN: CZXXA9. APPLICATION: CS 1988-8807 19881227.

AB Si plates are **cleaned** by covering with a soln. consisting of
deionized **water** 4-7, NH₄OH 1, H₂O₂ 1 part,
and **surfactant** 0.01-4 wt.%, and subsequent exposure to
ultrasound at 0.2-1.2 MHz. The **cleaning** procedure is rapid and

provides complete removal of chem. and mech. impurities. Typically, a soln. consisting of deionized water 5, NH4OH 1, H2O2 1 part, and surfactant 0.1% is used with ultrasound at 0.7 MHz.

- IC ICM C23G005-00
 CC 49-1 (Industrial Inorganic Chemicals)
 ST silicon plate cleaning soln ultrasound
 IT Sound and Ultrasound
 (cleaning by, of silicon plates covered by treatment soln.)
 IT Surfactants
 (cleaning soln. contg., for ultrasonic treatment of silicon plates)
 IT 7440-21-3, Silicon, uses
 RL: USES (Uses)
 (cleaning of plates of, soln. and ultrasonic treatment for)
 IT 1336-21-6, Ammonium hydroxide
 7722-84-1, Hydrogen peroxide, uses
 RL: USES (Uses)
 (cleaning soln. contg., for ultrasonic treatment of silicon plates)
 IT 1336-21-6, Ammonium hydroxide
 7722-84-1, Hydrogen peroxide, uses
 RL: USES (Uses)
 (cleaning soln. contg., for ultrasonic treatment of silicon plates)

L41 ANSWER 5 OF 11 HCA COPYRIGHT 2003 ACS on STN
 113:134693 Manufacture of alkaline salts of maleic anhydride copolymers..
 Klopotek, Alojzy; Jaroszewska, Maria (Instytut Chemii Przemyslowej, Pol.).
 Pol. PL 145180 B1 19880831, 9 pp. Abstracted and indexed from
 the unexamined application. (Polish). CODEN: POXXA7. APPLICATION: PL
 1984-249200 19840815.

AB Prepn. of the title salts involves (1) copolymerization in a water-sol. solvent in the presence of 0.5-5 wt.% H2O2 initiator at 35-80.degree. and maleic anhydride (I)/vinyl monomer mol ratio of 1:(1-50) and (2) treating the copolymers (or their 10-40% solns.) with an alkali metal hydroxide, NH4OH, or ethanolamine. Thus, a mixt. of acetone 100 mL, styrene 1.38 x 10-1 mol, I 1.38 x 10-1 mol, and H2O2 2.5 x 10-2 mol was boiled 3 h at 56.1.degree.. After copolymerization, the mixt. was cooled to 20-25.degree., the copolymer was dried with acetone at 1:3 ration, and poured into water at 15.degree. and copolymer-water wt. ratio 1:5. The ppt. was sepd. by filtration, washed with H2O, and dried to give 27 g maleic anhydride-styrene copolymer (acid no. 554) at a yield of 97%. The powd. copolymer was contacted with 10.684 g NaOH (in the form of 10% soln.) at 70.degree. to obtain 26.3 wt% soln of Na salt, which was dried to give 35 g solid (yield 99%).

- IC ICM C08F222-08
 ICS C08F212-08
 CC 46-6 (Surface Active Agents and Detergents)
 Section cross-reference(s): 35
 ST maleic anhydride copolymer alk salt; styrene maleic salt copolymer;
 cleaning maleic salt copolymer
 IT Detergents
 (cleaning compns., maleic anhydride-vinyl compd. copolymer salts for, prepn. of)
 IT 25736-61-2P, Maleic anhydride-styrene copolymer sodium salt 52002-63-8P
 98202-34-7P 129426-96-6P
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (pregn. of, for washing and cleaning agents)

L41 ANSWER 6 OF 11 HCA COPYRIGHT 2003 ACS on STN
 112:201177 Carpet **cleaning** composition containing alcohol and peroxyhydrate. Minns, Charles Randolph (BASF Corp., USA). Eur. Pat. Appl. EP 346835 A2 19891220, 6 pp. DESIGNATED STATES: R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1989-110696 19890613. PRIORITY: US 1988-206531 19880614.

AB Aq. **cleaning** compns. contg. a C1-5 alc. and a peroxyhydrate such as **H2O2** and having pH 7-12 are useful for removing soils and/or stains, esp. coffee stains, from synthetic polymer fibers, esp. carpet fibers. A mixt. of iso-PrOH 10, 30% aq. **H2O2** 30, **water** 50, and **NH4OH** 10% was sprayed on nylon, polyester, and polypropene carpets contg. black coffee stains and allowed to stand 1 h, giving complete stain removal.

IC ICM C11D003-00

ICS C11D007-50; C11D007-38; C11D007-06

CC 46-6 (Surface Active Agents and Detergents)

ST alc stain remover carpet; peroxide stain remover carpet; **cleaner** alc peroxide carpet; coffee stain remover carpet; nylon carpet stain remover; polyester carpet stain remover; polypropene carpet stain remover; isopropyl alc stain remover carpet; bleaching peroxide stain carpet

IT Carpets

(**cleaners** contg. alc. and peroxyhydrate for stained)

IT Peroxides, uses and miscellaneous

RL: USES (Uses)

(**cleaners** contg. alcs. and, for stained carpets)

IT Bleaching agents

(peroxide, **cleaners** contg. alcs. and, for stained carpets)

IT Alcohols, uses and miscellaneous

RL: USES (Uses)

(C1-5, **cleaners** contg. peroxide and, for stained carpets)

IT Detergents

(**cleaning** compns., alc.- and peroxide-contg., for stained carpets)

IT 124-43-6 1313-60-6, Sodium peroxide (Na₂O₂) 7775-27-1, Sodium persulfate 10332-33-9, Sodium perborate monohydrate 10486-00-7, Sodium perborate tetrahydrate 15593-49-4, Potassium peroxydiphosphate 15630-89-4, Sodium percarbonate 17014-71-0, Potassium peroxide 18278-90-5, Sodium peroxydiphosphate 66904-11-8 127030-48-2

RL: USES (Uses)

(**cleaners** contg. alcs. and, for stained carpets)

IT 64-17-5, Ethanol, uses and miscellaneous 67-56-1, Methanol, uses and miscellaneous 67-63-0, 2-Propanol, uses and miscellaneous 71-23-8, 1-Propanol, uses and miscellaneous 71-36-3, 1-Butanol, uses and miscellaneous 75-85-4, tert-Pentyl alcohol 78-83-1, Isobutyl alcohol, uses and miscellaneous 78-92-2, 2-Butanol

RL: USES (Uses)

(**cleaners** contg. peroxide and, for stained carpets)

L41 ANSWER 7 OF 11 HCA COPYRIGHT 2003 ACS on STN

74:44879 Compositions for **cleaning** and removing copper from metallic surfaces. Moeller, Fritz; Groschopp, Heinz; Wagenknecht, Rudolf (Collardin, Gerhard, G.m.b.H.). Ger. DE 1289720 19690220, 4 pp. (German). CODEN: GWXXAW. APPLICATION: DE 1964-H51404 19640116.

AB Gun bores are **cleaned** with a compn. consisting preferably of 800 cm³ NH₃ soln. (25%), 100 g melamine perhydrate (20% **H2O2**), 8 g CM-cellulose, and 200 cm³ **H2O** with a **wetting agent**. Simultaneous removal of Cu and gun powder residues without base metal attack and pollution problems is claimed.

IC C23G
 CC 56 (Nonferrous Metals and Alloys)
 ST cleaning copper stripping solns; copper stripping
 cleaning solns; stripping copper cleaning solns; ammonia
 cleaning copper stripping solns; peroxides cleaning
 copper stripping solns; melamine perhydrate copper stripping
 cleaning; perhydrate melamine copper stripping cleaning
 IT 33676-69-6
 RL: USES (Uses)
 (cleaning with, of copper from gun barrels)
 IT 109-89-7, uses and miscellaneous 110-86-1, uses and miscellaneous
1336-21-6 7727-21-1 7727-54-0 9000-11-7 9004-67-5
 11067-82-6
 RL: USES (Uses)
 (cleaning with, of copper, from gun barrels)
 IT **1336-21-6**
 RL: USES (Uses)
 (cleaning with, of copper, from gun barrels)

L41 ANSWER 8 OF 11 HCA COPYRIGHT 2003 ACS on STN
 65:2700 Original Reference No. 65:447c-d Surface preparation of magnesium
 molds for plastics. MacCaffray, Rex S., Jr.; Hankins, Kenneth E. (C. H.
 Masland & Sons). US 3248825 19660503, 3 pp. (Unavailable).
 APPLICATION: US 19640113.
 AB Such molds, commonly made of an alloy contg. at least 95% Mg, are finished
 by chem. etching. The molds are scrubbed with a slurry of MgO,
 CaCO₃, or preferably ZnO particles of .apprx.1-.mu. size or finer in an
 alk. soap soln. to produce a desirably uniform surface, free from shiny
 areas that result in blotchiness of the casting surfaces. Any cold
 liquid, such as H₂O or alc., can be used, and the shiny spots
 are eliminated more quickly if the slurry contains 0.2-5% 50-100 .mu. hard
 carbide particles by wt. of solids. The application can be made with a
 small scrubbing brush, preferably nylon, using 5-15 lb.
 pressure. Phosphate detergents should not be used, ordinary
 laundry soap being preferable.

NCL 051281000
 CC 20 (Nonferrous Metals and Alloys)
 IT **1336-21-6, Ammonium hydroxide**
 (in etching soln. for Ag and Ag alloys)
 IT **7722-84-1, Hydrogen peroxide**
 (in etching solns. for Ag and Ag alloys)
 IT **1336-21-6, Ammonium hydroxide**
 (in etching soln. for Ag and Ag alloys)
 IT **7722-84-1, Hydrogen peroxide**
 (in etching solns. for Ag and Ag alloys)

L41 ANSWER 9 OF 11 HCA COPYRIGHT 2003 ACS on STN
 53:69980 Original Reference No. 53:12695c-e Copolymers of vinyl lactams and
 trimethylallyl isocyanurate. Davis, Clyde W.; Ehlers, Forrest A. (Dow
 Chemical Co.). US 2848440 19580819 (Unavailable). APPLICATION:
 US .

AB Dye-receptive, water-insol. copolymers of vinylpyrrolidinone (I)
 and trimethylallyl isocyanurate (II) were prep'd. by dissolving 20.0 g. I and
 2.0 g. II in 45 ml. water, contg. 0.28 ml. 28% aq. NH₄OH
 and 1.8 ml. 5% aq. H₂O₂, and heating at 50.degree. for 16 hrs.
 without agitation. The white, gel-like product was dried in vacuo and
 then washed with water in a Soxhlet app. to recover 56.5% by wt.
 copolymer based on monomer charge. The water-insol. copolymer
 was ball-milled and 10% by wt. added to a polyacrylonitrile spinning soln.
 The resultant fibers had excellent dyeability with Calcodur Pink 2 BL.

The fiber did not lose significant amts. of the impregnated copolymer upon scouring in a boiling concd. aq. soln. of a detergent.

CC 25 (Dyes and Textiles Chemistry)

L41 ANSWER 10 OF 11 HCA COPYRIGHT 2003 ACS on STN
41:28593 Original Reference No. 41:5746c-i,5747a-c Investigation of various types of peroxides as initiators of emulsion polymerization. Yurzhenko, T. I.; Gromova, G. N.; Khatser, V. B. Zhurnal Obshchey Khimii, 16, 1505-20 (Unavailable) 1946. CODEN: ZOKHA4. ISSN: 0044-460X.

AB Detns. of the distribution between water and org. solvents, catalysis of the polymerization of 1,3-butadiene, stability, and effect on the properties of the polymer obtained, were made on 6 inorg. and org. peroxides: trimethylcarbinol hydroperoxide (I); dimethylethylcarbinol hydroperoxide (II); NaBO₃ (9.98% active O) (III); Bz₂O₂ (IV); K₂S₂O₈ (V); and H₂O₂ (3-5% aq. soln.) (VI). Distribution coeffs. between water and C₆H₆, water and isoprene, and 1.5% aq. NaOH and isoprene, were detd. for I, III, IV, V, VI, at 25 and 60.degree.. The content of the water-sol. peroxides in the org. phase was almost const. with time but fell rapidly in the aq. phase, particularly at higher temp. The solv. of IV decreased with time in the org. phase, but increased in water; I was almost equally distributed between water and the org. phase at 25.degree., increasing somewhat in the latter at 60.degree.. From measurements on the rate of polymerization in the presence of an amt. of peroxide equiv. to 0.1% active O (with respect to C₄H₆), with a 3% soln. of Na oleate (with a 0.32 N excess Na₂CO₃) as emulsifier, phase ratio 1:1, at 60.degree., from readings of the contraction of the liquid, the order of decreasing catalytic activity was: I (depth of polymerization s = 60% reached in 8 hrs.), V (s = 60% in 26 hrs.), IV (s = 20% in 36 hrs.), III and VI (s = 0.0% in 38 hrs.). At 40.degree., only the tertiary alcs. of the I and II type were active; no polymerization occurred with any other peroxide; with I, s = 40 was attained in 10 hrs., with II in 16 hrs. From detns. of the rate of decompn. in both water and in the above 3% Na oleate soln. (IV in C₆H₆), the stability decreased in the order: I (unimol. rate const. k, in min., = 0.000671 at 60.degree.), V (k = 0.00125), IV (k = 0.00196), III and VI (k = 0.238 and 0.360; decompn. complete in 10-15 min. in 1-1.5% soln.). Addn. of 0.32 N Na₂CO₃ accelerated the rate of decompn. of VI most markedly, NaOH somewhat less, NH₄OH least; the effect was strongly enhanced in a 3% Na oleate soln. In the same medium, the rate of decompn. of the highly stable peroxides (such as I) was much lower than the rate of polymerization; for peroxides of medium stability (such as V) decompn. was faster than polymerization, for the low-stability IV, much faster. For the least stable III and VI, polymerization of isoprene was found to lag after decompn. to such an extent that polymerization practically only started when decompn. was nearly complete; in this case the peroxides undoubtedly are only active through mol. O. In contrast, the catalytic action of peroxides of type V, characterized by the closeness of the rate curves of decompn. and polymerization, evidently is due to at. O, whereas catalysis by the highly stable tertiary alcs. (I, II) proceeds over the radicals Me₃C and OOH. Variation of the concn. of I, at 40 and 50.degree., from 0.01 to 0.1% active O increased the rate of polymerization of C₄H₆; further increase resulted in a decrease of the rate; at 60.degree., the max. lay at 0.05% active O. Concurrently, detns. of the surface adsorption isotherm at 25.degree., from measurements of the surface tension, showed satn. of the surface layer of I on water to be attained at a concn. corresponding to 0.135% active O; hence the max. is interpreted in terms of satn. of the adsorption layer at the phase boundary. On further increasing the amt. of the peroxide, its concn. in the bulk of the aq. phase increased rapidly,

promoting rupture of reaction chains; hence the observed fall of the rate of polymerization. At const. concn. of I, the solv. of the polymer produced in C₂H₄C₁₂ (after 24 hrs.) decreased from 77.0 to 18.1%, with s increasing from 15.2 to 73.5%. Variation of the concn. of I (0.01, 0.10, 0.15, 0.60% active O), gave s of 41.0, 40.5, 60.2 (max.), 18.6; solv. 27.0, 85.0, 100, 100; mol. wt. (Staudinger) 11,000, 23,000, 37,000 (max.), 9000, resp.; the swelling ability varied in the same way as the mol. wt.. This corroborates the hypothesis of rupture of chains by the peroxide.

- CC 30 (Rubber and Other Elastomers)
- IT Peroxides
(as catalysts, in polymerization of butadiene and isodiene and isoprene and distribution between **water** and solvents)
- IT Catalysts
(in polymerization, of butadiene and isoprene, peroxides as, and their distribution between **water** and solvents)
- IT Partition
(of peroxide catalysts for polymerization between **water** and solvents)
- IT Adsorption
(of peroxide catalysts on surface of **water** and solvents)
- IT Sodium perborate
(as catalyst in polymerization of butadiene and isoprene and distribution between **water** and solvents)
- IT 75-91-2, tert-Butyl hydroperoxide
(as catalyst in polymerization and its distribution between **water** and solvents)
- IT 94-36-0, Benzoyl peroxide 7722-84-1, Hydrogen peroxide 7727-21-1, Potassium peroxydisulfate
(as catalyst in polymerization of butadiene and isoprene and distribution between **water** and solvents)
- IT 78-79-5, Isoprene
(polymerization of, with peroxide catalysts and peroxide catalyst distribution between **water** and isoprene)
- IT 7722-84-1, Hydrogen peroxide
(as catalyst in polymerization of butadiene and isoprene and distribution between **water** and solvents)

L41 ANSWER 11 OF 11 HCA COPYRIGHT 2003 ACS on STN
36:34572 Original Reference No. 36:5381a-i The estimation of small percentages of rubber in fibrous materials. Blow, C. M. India Rubber Journal, 102, 719-22 (Unavailable) 1942. CODEN: IRJOAO. ISSN: 0367-9985.

AB Four general methods for sepg. unvulcanized or vulcanized rubber from vegetable and animal fibers are discussed, both with respect to known facts and to exptl. investigations of these methods by B. (1) the use of solvents to remove rubber without affecting the fiber (in this case the % ext. or loss in wt. is measured); (2) destruction of the fiber by a chem. reagent which does not affect the rubber; (3) oxidation, or other chem. alteration of the rubber to render it more easily removable from the fiber by extn. with a solvent or by emulsification with a detergent; (4) the quant. reaction of a chem. reagent with the rubber. In addn. to the conventional caustic treatment in method (2), it was found that a promising method is to treat 1-2 g. of material with boiling concd. HCl, decant through a sintered-glass or alundum crucible, agitate the slurry of degraded fiber and rubber with 50 cc. of **water** and 10 cc. of benzene, sep. the 2 layers, ppt. the rubber from the benzene by acetone, filter and weigh. A little oil-sol. dye in the benzene sometimes makes the sepn. easier. Oxidized rubber is sol. in acetone and is not included in the result. Method (3) has not been studied heretofore. Three steps are necessary: (a) treatment with an oxidation catalyst, e. g., Co or Cu

naphthenate, linoleate or stearate in CCl₄ or benzene or emulsified in NH₄OH (1-2% of catalyst by wt. of the sample); (b) oxidation of the finely divided sample by heating 1-2 hrs. in air at 70.degree. or by steeping in excess H₂O₂ at 50-60.degree. for 15-30 min., filtering and evapg., and (c) sepn. of the fiber from the oxidized rubber either by removing the latter by boiling 1-2% aq. NaOH or Na₂CO₃, with or without Na oleate, and collecting, washing, drying and weighing the fiber, or extg. the oxidized rubber with acetone and weighing the dried residual fiber or dried ext. Ordinarily it is preferable to weigh the fiber (controlling its moisture content), since the rubber contains an indefinite percentage of O. Blank detns. showed that with Co linoleate and H₂O₂, cellulose loses 2% by wt. in boiling aq. NaOH. This fact is in favor of acetone extn. of the oxidized rubber. The only promising technique in method (4) seemed to be to dry the finely divided sample at 80-100.degree., immerse 1 g. in 50-100 cc. of a CCl₄ soln. of Br contg. 50% more Br than the calcd. amt., add. aq. KI after 30-120 min., and titrate the liberated I with Na₂S₂O₃. However, this procedure did not give reliable results with rubberized wool fabric. Certain general recommendations are made for sepg. rubber and fibrous materials. The sample should be finely ground or cut, and first of all extd. with acetone to remove oils, fats, waxes, org. dyes and oxidized rubber. When a soap-and-soda scour or NaOH treatment is included in the procedure, extn. with aq. NaOH also is necessary to remove proteins, soaps, sol. coagulants, starches, etc. In methods involving destruction of the rubber, sepn. of fiber from emulsified oxidized rubber is sometimes difficult, and it is of advantage to centrifuge the soln., wash the sepd. fiber, filter through a Gooch crucible, dry and weigh. Its purity is detd. by detg. its ash. When the oxidized rubber is estd. by acetone extn., the fiber can be filtered directly into a paper thimble. In methods involving destruction of the fiber, acetone-insol. and water-insol. components are detd. as rubber, and therefore the purity of the rubber should be checked by detg. its ash, and a correction for the Co or Cu salt added must be made. Typical analyses of rubberized wool yarn, leather board, rubberized cotton yarn, cellulose board and imitation leather are included.

CC 30 (Rubber and Allied Substances)

FYI, these dates are not going to be any good for you.

=> d L39 1-3 cbib abs hitnd hitrn

L39 ANSWER 1 OF 3 HCA COPYRIGHT 2003 ACS on STN
139:172150 Cleaning solution for substrate surfaces and
cleaning method. Morinaga, Hitoshi; Mochizuki, Hideaki; Ito,
Atsushi (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP
2003221600 A2 20030808, 13 pp. (Japanese). CODEN: JKXXAF. APPLICATION:
JP 2002-331915 20021115. PRIORITY: JP 2001-350947 20011116.

AB Title soln. comprise (A) ethylene oxide adduct type
surfactants having polyoxyethylene groups and
(substituted)hydrocarbon groups, (B) alkali components, (C) 0.01-4%
hydrogen peroxide, and (D) water, wherein the
ratio (m/n) of no. of carbon in hydrocarbon groups (m) and no. of
oxyethylene group (n) in polyoxyethylene groups in
surfactants is .1 to <1.5. Thus, a cleaning soln. with

pH 10.5 comprising 33 ppm **Polyethylene glycol monododecyl ether** with m/n 1.1, **ammonium hydroxide**, 1.4% **hydrogen peroxide**, and **water** showed good **cleaning** against contaminated silicon wafers.

- IC ICM C11D017-08
 ICS B08B003-08; B08B003-10; B08B003-12; C11D001-722; C11D003-26;
 C11D003-39; H01L021-304
- CC 76-3 (Electric Phenomena)
- ST **cleaning** soln substrate surface; **Polyethylene glycol alkyl ether hydrogen peroxide ammonium hydroxide** compn
- IT **Cleaning**
Detergents
Surfactants
 (cleaning soln. for substrate surfaces and **cleaning** method)
- IT Alkali metal hydroxides
 RL: REM (Removal or disposal); PROC (Process)
 (cleaning soln. for substrate surfaces and **cleaning** method)
- IT Quaternary ammonium compounds, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (hydroxide; **cleaning** soln. for substrate surfaces and **cleaning** method)
- IT 1336-21-6, **Ammonium hydroxide**
 7722-84-1, **Hydrogen peroxide**, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (cleaning soln. for substrate surfaces and **cleaning** method)
- IT 7440-21-3, Silicon, processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
 (substrate; **cleaning** soln. for substrate surfaces and **cleaning** method)
- IT 9002-92-0, **Polyethylene glycol monododecyl ether**
 9004-95-9, **Polyethylene glycol hexadecyl ether**
 9005-00-9, **Polyethylene glycol octadecyl ether**
 24938-91-8, **Polyethylene glycol tridecyl ether**
 27252-75-1, **Polyethylene glycol octyl ether**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (surfactant; **cleaning** soln. for substrate surfaces and **cleaning** method)
- IT 1336-21-6, **Ammonium hydroxide**
 7722-84-1, **Hydrogen peroxide**, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (cleaning soln. for substrate surfaces and **cleaning** method)

L39 ANSWER 2 OF 3 HCA COPYRIGHT 2003 ACS on STN

137:378790 Method for **cleaning** surface of substrates for display devices. Morinaga, Hitoshi; Mochizuki, Hideaki (Mitsubishi Chemical Corporation, Japan). PCT Int. Appl. WO 2002094462 A1 20021128, 39 pp.
 DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR,

- NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2002-JP4850 20020520. PRIORITY: JP 2001-151960 20010522.
- AB A method for **cleaning** the surface of a substrate includes: (1) a step of washing the surface of a substrate with an alk. **cleaning** agent contg. a complexing agent, and (2) a step of washing the surface with a **cleaning** agent contg. HF in a content (C wt. %) of 0.03 to 3% with a washing time (t seconds) of .1toreq.45 s, provided that C and t satisfy the relation: $0.25 \leq t \leq 1.29 \cdot \frac{C}{0.03}$, wherein the step (2) is carried out after the step (1). The method provides a highly efficient washing of a substrate, wherein (a) the substrate can be washed in a short time, (b) both particle contaminants and metal contaminants can be removed, and (c) the occurrence of a problem assocd. with the washing of a substrate such as re-deposition of the contaminants or the dimensional change of a processed substrate through etching is remarkably reduced.
- IC ICM B08B003-08
- CC 76-3 (Electric Phenomena)
Section cross-reference(s): 74
- ST **cleaning** washing surface substrate hydrogen chloride; display device substrate surface **cleaning**
- IT **Cleaning**
Electrooptical imaging devices
Surfactants
Washing
(**cleaning** of substrate surface in manuf. of semiconductor devices)
- IT 7440-21-3, Silicon, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**cleaning** of substrate surface in manuf. of semiconductor devices)
- IT 60-00-4, uses 1170-02-1 7732-18-5, Water, uses
84677-62-3
RL: NUU (Other use, unclassified); USES (Uses)
(**cleaning** of substrate surface in manuf. of semiconductor devices)
- IT 1336-21-6, Ammonium hydroxide 7664-39-3,
Hydrogen fluoride, reactions 7722-84-1, Hydrogen peroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**cleaning** of substrate surface in manuf. of semiconductor devices)
- IT 12033-89-5, Silicon nitride, processes
RL: REM (Removal or disposal); PROC (Process)
(particle; particle removal in **cleaning** of substrate surface for semiconductor devices)
- IT 1330-69-4, Dodecylbenzene sulfonate
RL: NUU (Other use, unclassified); USES (Uses)
(**surfactant**; **cleaning** of substrate surface for semiconductor devices)
- IT 9002-92-0, Polyethylene glycol monododecyl ether
9004-98-2, Polyethylene glycol monooleyl ether
27176-87-0, Dodecylbenzenesulfonic acid
RL: NUU (Other use, unclassified); USES (Uses)
(**surfactant**; **cleaning** of substrate surface in manuf. of semiconductor devices)
- IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**cleaning** of substrate surface in manuf. of semiconductor devices)

IT 1336-21-6, Ammonium hydroxide
7722-84-1, Hydrogen peroxide, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(cleaning of substrate surface in manuf. of semiconductor devices)

L39 ANSWER 3 OF 3 HCA COPYRIGHT 2003 ACS on STN
136:127113 Particle removal and its mechanism on hydrophobic silicon wafer in highly diluted NH₄OH solutions with an added surfactant . Park, Jin-Goo; Lee, Sang-Ho; Kim, Sang-Yong (Department of Metallurgy and Materials Engineering, Hanyang University, Ansan, 425-791, S. Korea). Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers, 40(11), 6182-6186 (English) 2001. CODEN: JAPNDE. Publisher: Japan Society of Applied Physics.

AB Wafer cleaning in semiconductor processes is one of the most crit. steps because of the rapid increase in the device integration d. and its direct impact on device yield. Highly dild. NH₄OH solns. to which a nonionic polyoxy-alkylene alkylphenyl ether surfactant was added were evaluated to measure their cleaning efficiency and to det. the particle removal mechanism. The particle removal expt. was performed in a 0.2 vol% NH₄OH soln., which has a pH value equiv. to that of conventional SC1 (1:1:5, NH₄OH:H₂O₂:H₂O mixt.) soln., as a function of soln. temp. A surfactant of crit. micelle concn. of 50 ppm was added to the NH₄OH soln. The etch rate of silicon in 0.2 vol% NH₄OH soln. decreased to 2.4 .ANG./min from 92 .ANG./min at 80.degree. by the addn. of the surfactant due to the adsorption of the surfactant on the surface. The particle removal efficiency increased as the temp. of the solns. increased. A particle removal of over 95% was obsd. when wafers were treated in surfactant-added NH₄OH soln. at 80.degree.. This can most likely be attributed to the slight increase of the etch rate and better passivation of the surfactant on the silicon surface at a higher temp.

CC 76-3 (Electric Phenomena)
ST semiconductor wafer cleaning ammonium

hydroxide

IT Particles

Surfactants

(particle removal and its mechanism on hydrophobic silicon wafer in highly dild. NH₄OH solns. with added surfactant)

IT Cleaning

(particle removal and its mechanism on hydrophobic silicon wafer in highly dild. NH₄OH solns. with an added surfactant)

IT 1336-21-6, Ammonium hydroxide

RL: NUU (Other use, unclassified); USES (Uses)
(particle removal and its mechanism on hydrophobic silicon wafer in highly dild. NH₄OH solns. with added surfactant)

IT 7440-21-3, Silicon, processes

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(wafers; particle removal and its mechanism on hydrophobic silicon wafer in highly dild. NH₄OH solns. with added surfactant)

IT 1336-21-6, Ammonium hydroxide

RL: NUU (Other use, unclassified); USES (Uses)
(particle removal and its mechanism on hydrophobic silicon wafer in highly dild. NH₄OH solns. with added surfactant)

I didn't date limit the answers in Japio or Derwent. Derwent makes it almost impossible, it takes a very long time. Also I tried to take out duplicates, but I would imagine some duplicates remain.

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=> d L87 1-15 ibib abs ind

L87 ANSWER 1 OF 15 JAPIO (C) 2003 JPO on STN
ACCESSION NUMBER: 2002-025964 JAPIO
TITLE: METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE
INVENTOR: HARA KOJI; TAKAHARA YOICHI; SAEKI TOMONORI; TOMIOKA
HIDEKI; ITO MASAKI; TSUGANE MASARU; ITO HARUO;
FUNAHASHI TOMOMASA
PATENT ASSIGNEE(S): HITACHI LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2002025964	A	20020125	Heisei	H01L021-304

APPLICATION INFORMATION
STN FORMAT: JP 2000-206828 20000704
ORIGINAL: JP2000206828 Heisei
PRIORITY APPLN. INFO.: JP 2000-206828 20000704

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined
Applications, Vol. 2002

AN 2002-025964 JAPIO
AB PROBLEM TO BE SOLVED: To protect electrodes or wirings formed of high-melting metal nitride against etching at **cleaning** after the electrodes or wirings are formed in the manufacture of a semiconductor **device** provided with the electrodes or wirings formed of high-melting metal nitride.

SOLUTION: A semiconductor **device** manufacturing method comprises a first process of forming conductor films that contain high-melting point nitride films on a semiconductor **substrate**, a second process of patterning the conductor films into required forms, and a third process of **cleaning** the patterned conductor films. A **cleaning solution** used in the third process of **cleaning** the patterned conductor films is a mixed **solution** of quaternary **ammonium hydroxide** represented by general formula, $[(R_1)_nN(R_2)_{4-n}]^+OH^-$ (R_1 is a 1-2C alkyl group, R is a 1-2C alkyl group or a 1-2C hydroxy-substituted alkyl group, and R_1 and R may be identical to each other or different from each other. n is an integer of 1 to 3), a **hydrogen peroxide solution**, and

pure water.

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IC ICM H01L021-304
ICS H01L021-28; H01L021-3213; H01L021-3205; H01L029-43; H01L029-78

L87 ANSWER 2 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 2001-326209 JAPIO
TITLE: METHOD FOR TREATING SURFACE OF SILICON
SUBSTRATE
INVENTOR: TAKADA RYOKO; TAKAISHI KAZUNARI
PATENT ASSIGNEE(S): MITSUBISHI MATERIALS SILICON CORP
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001326209	A	20011122	Heisei	H01L021-306

APPLICATION INFORMATION

STN FORMAT: JP 2000-142764 20000516
ORIGINAL: JP2000142764 Heisei
PRIORITY APPLN. INFO.: JP 2000-142764 20000516
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AN 2001-326209 JAPIO

AB PROBLEM TO BE SOLVED: To provide a method for treating surface of silicon **substrate** by which a **clean** silicon **substrate** can be obtained by well removing fine damages caused by working and organic matters, metallic impurities, and fine particles adhering to the surface of the **substrate** through a small number of steps and, in addition, the fraction non-defective after film formation can be improved.

SOLUTION: This method includes a step 11 of dipping the silicon **substrate** in a mixed **solution** of **hydrogen peroxide** and **ammonium hydroxide**, etc., a step 12 of dipping the silicon **substrate** dipped in the mixed **solution** in at least one oxidizing liquid selected from among a dissolved ozone aqueous **solution**, nitric acid, and **hydrogen peroxide**, and a step 13 of dipping the silicon **substrate** dipped in the oxidizing liquid in a mixed **solution** of an organic acid or its salt and hydrofluoric acid. The method also includes a step 14 of dipping the silicon **substrate** dipped in the mixed **solution** in the step 13 in a liquid containing the organic acid or its salt and rinsing steps using extremely pure **water** among the steps 11, 12, 13 and 14.

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IC ICM H01L021-306
ICS H01L021-304

L87 ANSWER 3 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 2001-284450 JAPIO
TITLE: MANUFACTURING METHOD FOR SEMICONDUCTOR DEVICE
AND SEMICONDUCTOR DEVICE
INVENTOR: MORIMOTO NOBORU; MATSUURA MASAZUMI; GOTO KINYA
PATENT ASSIGNEE(S): MITSUBISHI ELECTRIC CORP
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001284450	A	20011012	Heisei	H01L021-768

APPLICATION INFORMATION

STN FORMAT: JP 2000-100483 20000403
 ORIGINAL: JP2000100483 Heisei
 PRIORITY APPLN. INFO.: JP 2000-100483 20000403
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AN 2001-284450 JAPIO

AB PROBLEM TO BE SOLVED: To provide a method for manufacturing a semiconductor **device** which can avoid a short circuit between each electric wiring in an upper layer electric wiring, even when a part of top of a FSG film is exposed by dispersion of a manufacturing process.

SOLUTION: A method includes grinding to remove a USG film 4 by 900 nm thick from the top with a CMP method, after depositing the USG film 4 with 1 ×m of film thickness all over a FSG film 3. At this time, a part of the top of the FSG film is exposed by dispersion of the manufacturing process. And next, the surface of an interlayer insulation film 50 is washed with a **cleaning solution** which has an etching rate for the FSG film 5 almost equal to an etching rate for the USG film 3. Such a **cleaning solution** includes, for example, ammonia hyperhydration of NH4OH:H2O2:

H2O=1:1:20. The surface of the interlayer isolation film 50 is washed by means of immersing a structure shown in Figure 5 in the ammonia hyperhydration for 60 seconds.

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IC ICM H01L021-768

ICS H01L021-306; H01L021-316

L87 ANSWER 4 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 2001-212968 JAPIO

TITLE: METHOD FOR **CLEANING CRYSTAL****SUBSTRATE USING CONDUCTIVE SOLUTION**

INVENTOR: RAGHAVAN NADIPURAM V VIJAYA; LEUNG ELAINE LAI-YEE

PATENT ASSIGNEE(S): AGILENT TECHNOL INC

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001212968	A	20010807	Heisei	B41J002-16

APPLICATION INFORMATION

STN FORMAT: JP 2000-348463 20001115
 ORIGINAL: JP2000348463 Heisei
 PRIORITY APPLN. INFO.: US 1999-441716 19991116
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AN 2001-212968 JAPIO

AB PROBLEM TO BE SOLVED: To provide a method for efficiently **cleaning** crystal **substrates** which require a low defect density.

SOLUTION: This processing method for **cleaning** the crystal **substrate** (74) comprises a step (34) of applying a **solution** containing **water** and **ammonium hydroxide** to the crystal **substrate**, a step (36) of treating the crystal **substrate** with a **solution** containing **hydrogen peroxide** and a predetermined acid, a process (38) of rinsing the crystal **substrate** with **water** saturated with carbonate, a process (40) of applying a **solution** including **water** and **ammonium hydroxide** to the rinsed crystal **substrate**, and a process of rinsing the crystal **substrate** again with **water** saturated with carbonate.

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IC ICM B41J002-16
 ICS B08B003-08; G03F001-08

L87 ANSWER 5 OF 15 JAPIO (C) 2003 JPO on STN
 ACCESSION NUMBER: 2001-189297 JAPIO
 TITLE: METHOD AND DEVICE FOR CLEANING
WAFER
 INVENTOR: SUZUKI TATSUYA
 PATENT ASSIGNEE(S): NEC CORP
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001189297	A	20010710	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1999-372658 19991228
 ORIGINAL: JP11372658 Heisei
 PRIORITY APPLN. INFO.: JP 1999-372658 19991228
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AN 2001-189297 JAPIO

AB PROBLEM TO BE SOLVED: To provide a method for **cleaning** a **wafer** suited to pre-processing or post-processing for micro machining semiconductor **device**, using a single-tank **wafer cleaning device**.

SOLUTION: This **cleaning** method is used to clean a **wafer** arranged vertically in a tank, by jetting a chemical **solution** and a **cleaning water** obliquely upward or obliquely downward. This method includes a step for dipping the **wafer** in the tank where the **cleaning water** is filled and streamed, a step for **cleaning** the **wafer** by supplying a first chemical **solution** that an ammonium, **hydrogen peroxide** and **water** are mixed at a volume ratio of NH₄OH:H₂O₂: **water** = 1:1:X₁ (where X₁: >20 and <70) and using an upward stream, a step for applying a dip **cleaning**, a step to for supplying a second chemical **solution** that an ammonium, **hydrogen peroxide** and **water** are mixed at a volume ratio of 1:1:X₂ (X₂>X₁) and has a **cleaning** performance and to substitute the first chemical **solution** with the second chemical **solution**, a step for applying QDR **cleaning**, and a step to supply a rinsing **water** and rinse the **water** by using the upward stream rinsing **water**.

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IC ICM H01L021-304

L87 ANSWER 6 OF 15 JAPIO (C) 2003 JPO on STN
 ACCESSION NUMBER: 2001-044155 JAPIO
 TITLE: BRUSHLESS MULTIPLE PATH **CLEANING** METHOD FOR SILICON **WAFER** AFTER CHEMICAL-MECHANICAL POLISHING USING IMMERSION
 INVENTOR: HACKENBERG DIANA
 PATENT ASSIGNEE(S): INTERSIL CORP
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001044155	A	20010216	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 2000-173059 20000609
 ORIGINAL: JP2000173059 Heisei
 PRIORITY APPLN. INFO.: US 1999-342948 19990629
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AN 2001-044155 JAPIO

AB PROBLEM TO BE SOLVED: To reduce extra manufacturing cost and manufacturing time by immersing a **wafer** into a first megasonic chemical bath having a pH value equal to that of a substance to be removed and then **cleaning** the **wafer** with this megasonic bath.

SOLUTION: A silicon **wafer** is dipped into an interfacial active agent and thereafter it is then immersed into a megasonic bath including the **solution** consisting of ultra-pure **water**, **ammonium hydroxide** and **hydrogen peroxide** having the pH value equal to that of the substance to be removed for the first chemical megasonic sub-cycle. Immediately after the first chemical megasonic sub-cycle, the **wafer** is washed with the **cleaning water** using a megasonic unit for the first **water-cleaning** cycle. Moreover, with the same method, the stages of the second to fourth chemical megasonic cycles and second to sixth megasonic cycles are executed. Thereby, extra manufacturing cost and production time can be reduced.

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ICM H01L021-304

ICS B08B003-08; B08B003-12

L87 ANSWER 7 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 2000-208469 JAPIO

TITLE: METHOD OF EVALUATING QUALITY OF SEMICONDUCTOR
WAFER

INVENTOR: MIYAZAKI SUMIO; MIYAZAKI MORIMASA

PATENT ASSIGNEE(S): SUMITOMO METAL IND LTD

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2000208469	A	20000728	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1999-9404 19990118
 ORIGINAL: JP11009404 Heisei
 PRIORITY APPLN. INFO.: JP 1999-9404 19990118
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000

AN 2000-208469 JAPIO

AB PROBLEM TO BE SOLVED: To provide a method for evaluating the quality of a semiconductor **wafer** that can conveniently evaluate characteristics of a semiconductor **wafer** such as a breakdown voltage characteristic of an oxide film, etc.

SOLUTION: This method of evaluating the quality of a semiconductor **wafer** includes the steps of **cleaning** a semiconductor **wafer** surface a plurality of times by using a mixture **solution** of NH₄OH, H₂O₂ and H₂O at a compounding ratio with a high etch selectivity against defects and surface roughness present near the semiconductor **wafer** surface, and evaluating the quality of the semiconductor **wafer** surface by measuring the distribution of light point defects(LPD) in the **wafer** surface by using a surface inspecting **device** using a high-intensity light source such as a laser, etc.

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 IC ICM H01L021-304
 ICS G01N021-88

L87 ANSWER 8 OF 15 JAPIO (C) 2003 JPO on STN
 ACCESSION NUMBER: 2000-091291 JAPIO
 TITLE: WASHING METHOD OF SILICON **WAFER**
 INVENTOR: SATO MASANORI; SUZUKI YASUHIRO
 PATENT ASSIGNEE(S): MEMC KK
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2000091291	A	20000331	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1998-258548 19980911
 ORIGINAL: JP10258548 Heisei
 PRIORITY APPLN. INFO.: JP 1998-258548 19980911
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000

AN 2000-091291 JAPIO

AB PROBLEM TO BE SOLVED: To provide a washing method of a silicon **waffer** which can improve both oxide film breakdown strength characteristic and **cleanliness** of a silicon **waffer** surface at once.

SOLUTION: After a silicon **waffer** is washed by ozone-added ultra-pure **water** and a silicon **waffer** is washed by **NH4OH-H2O2** mixed **solution** of 30 to 70°C, a silicon **waffer** is further washed by ozone-added ultra-pure **water** and a silicon **waffer** is washed by **NH4OH-H2O2-H2O** mixed **solution** of 40 to 80°C. Both oxide film breakdown strength characteristic and **cleanliness** of a silicon **waffer** surface can be improved at once by combining ozone-added ultra-pure **water** washing which is excellent in decomposition/removal of organic compound and removal of transition metal impurities (especially, Cu) and washing by **NH4OH-H2O2-H2O** mixed **solution** which is excellent in washing effect.

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IC ICM H01L021-304
 ICS B08B003-08

L87 ANSWER 9 OF 15 JAPIO (C) 2003 JPO on STN
 ACCESSION NUMBER: 2000-049133 JAPIO
 TITLE: METHOD OF **CLEANING** SEMICONDUCTOR **SUBSTRATE**
 INVENTOR: TAKADA RYOKO; TAKAISHI KAZUNARI; YANAGI SHIGENARI
 PATENT ASSIGNEE(S): MITSUBISHI MATERIALS SILICON CORP
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2000049133	A	20000218	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1998-217148 19980731
 ORIGINAL: JP10217148 Heisei
 PRIORITY APPLN. INFO.: JP 1998-217148 19980731
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined

Applications, Vol. 2000

AN 2000-049133 JAPIO
 AB PROBLEM TO BE SOLVED: To remove microscopic damages caused by processing a semiconductor **substrate**, satisfactorily removing fine particles adhered to the surface of the semiconductor **substrate**, using the reduced number of processes and remove metallic impurity adhered to the surface of the semiconductor **substrate**.

SOLUTION: After impregnating a semiconductor **substrate** in a mixture of **hydrogen peroxide** and **ammonium hydroxide** and then in dissolved ozone **water**, the semiconductor **substrate** is impregnated in a liquid containing hydrofluoric acid at 0.005-0.25 weight%. After this, it is preferably soaked in oxidizing liquid. Organic acid or organic salt at 0.0001 weight% or more is further preferably added to hydrofluoric acid.

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IC ICM H01L021-304

ICS B08B003-08; C11D007-08; C11D007-18; C11D007-60

L87 ANSWER 10 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 2000-049132 JAPIO

TITLE: METHOD OF CLEANING SEMICONDUCTOR
SUBSTRATE

INVENTOR: TAKADA RYOKO; TAKAISHI KAZUNARI

PATENT ASSIGNEE(S): MITSUBISHI MATERIALS SILICON CORP

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2000049132	A	20000218	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1998-217147 19980731

ORIGINAL: JP10217147 Heisei

PRIORITY APPLN. INFO.: JP 1998-217147 19980731

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000

AN 2000-049132 JAPIO

AB PROBLEM TO BE SOLVED: To satisfactorily remove organic substances, metallic impurities and fine particles adhered to the surface of a semiconductor **substrate**, using the reduced number of processes and remove microscopic damages occurring due to processing the semiconductor **substrate**.

SOLUTION: After impregnating a semiconductor **substrate** in a mixture of hydrofluoric acid at 0.005-0.25 weight % and organic acid or organic salt at 0.0001 weight % or more, the semiconductor **substrate** is impregnated in rinsing **solution** containing organic acid or organic salt. Before impregnating it in the mixture, the semiconductor **substrate** is soaked in a mixture of **hydrogen peroxide** and **ammonium hydroxide** and is then preferably rinsed with ultrapure **water**.

After impregnating it in the rinsing **water** containing organic acid or organic salt, it is preferably soaked in oxidizing liquid. In addition, hydrofluoric acid at 0.1 weight % or less may be added to the rinsing **water** containing organic acid or organic salt.

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IC ICM H01L021-304

ICS B08B003-08; C11D007-08; C11D007-26; C11D007-60

L87 ANSWER 11 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 2000-036479 JAPIO
 TITLE: PRODUCTION OF SEMICONDUCTOR DEVICE
 INVENTOR: HARA KOJI; TAKAHARA YOICHI; SAEKI TOMONORI; TOMIOKA
 HIDEKI; ITO MASAKI; TSUGANE MASARU; ITO HARUO;
 FUNAHASHI TOMOMASA
 PATENT ASSIGNEE(S): HITACHI LTD
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2000036479	A	20000202	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1998-202930 19980717
 ORIGINAL: JP10202930 Heisei
 PRIORITY APPLN. INFO.: JP 1998-202930 19980717
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000

AN 2000-036479 JAPIO

AB PROBLEM TO BE SOLVED: To enhance reliability by employing a mixed liquid of a specified tertiary **ammonium hydroxide**, **hydrogen peroxide water** and ultrapure **water** in the **cleaning** after formation of a gate electrode using a high melting point metal nitride, i.e., tungsten nitride.

SOLUTION: A multiplayer conductor film including a high melting point metal nitride, i.e., tungsten nitride film, is formed on a semiconductor **substrate** and patterned into a desired shape before being **cleaned**. A mixed liquid of a tertiary **ammonium hydroxide**, **hydrogen peroxide water** and ultrapure **water** represented by a formula [I(R₁)nN(R)_{4-n}+OH⁻] (R₁ is alkyl group of 1-4C, R is alkyl group of 1-4C or hydroxy substituted alkyl group of 1-4C, R₁ and R may be identical or not, and n is an integer of 1-3)]. According to the method, the tungsten nitride film can be protected against being etched at the time of **cleaning**.

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IC ICM H01L021-304

ICS H01L021-28; H01L029-78

L87 ANSWER 12 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 1999-274129 JAPIO
 TITLE: CLEANING OF SEMICONDUCTOR SUBSTRATE
 INVENTOR: TAKADA RYOKO; FUJIMOTO MARUHISA; TAKAISHI KAZUNARI
 PATENT ASSIGNEE(S): MITSUBISHI MATERIALS SILICON CORP
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 11274129	A	19991008	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1998-77257 19980325
 ORIGINAL: JP10077257 Heisei
 PRIORITY APPLN. INFO.: JP 1998-77257 19980325
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1999

AN 1999-274129 JAPIO

AB PROBLEM TO BE SOLVED: To remove fine damages caused by the processing of a semiconductor **substrate** and to properly remove organic matter,

metallic impurities and fine particles deposited on the semiconductor **substrate** in few number of steps.

SOLUTION: A semiconductor **substrate** is cleaned with use of a mixture **solution** of **hydrogen peroxide** and **ammonium hydroxide** and then rinsed with ultra-pure **water**. The rinsed **substrate** is **cleaned** with the use of a **cleaning solution** containing 0.0001 weight % or more of organic acid or organic acid chloride. The **substrate** is further **cleaned** with an **oxidizing solution**. Preferably, the **cleaning solution** is added in the organic acid or organic acid chloride and 0.005-0.25 weight % of hydrofluoric acid is further included.

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IC ICM H01L021-304

L87 ANSWER 13 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 1997-270412 JAPIO

TITLE: CLEANING DEVICE AND METHOD

INVENTOR: MIYAWAKI MAMORU

PATENT ASSIGNEE(S): CANON INC

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 09270412	A	19971014	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1996-79041 19960401

ORIGINAL: JP08079041 Heisei

PRIORITY APPLN. INFO.: JP 1996-79041 19960401

SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1997

AN 1997-270412 JAPIO

AB PROBLEM TO BE SOLVED: To remove flowing materials by suction so as to prevent foreign objects from adhering around the edge of a **substrate** and being left even after **cleaning** by a method wherein a suction opening is provided around the contacting part of a **substrate** holding member with the side of the **substrate**.

SOLUTION: A vacuum pump connected to an exhaust vent and a drainage opening is actuated to reduce a **cleaning** tank in pressure, and then nitrogen gas is introduced into the **cleaning** tank through a nozzle 6. Ultra-pure **water** loaded with 2 to 10ppm of ozone is made to drop down on the surface of a **wafer** 3 through a chemical nozzle 2 keeping the **wafer** 3 rotating at a speed of 1500 to 3000rpm. In succession, mixed liquid composed of **ammonium hydroxide**, **hydrogen peroxide** aqueous **solution**, and ultra-pure **water** mixed at the ratio 2:1:5 and another mixed liquid composed of hydrofluoric acid and ultra- pure **water** mixed at the ratio 0.01:1 are successively made to drop down on the surface of the **wafer** 3, and lastly mixed liquid composed of isopropyl alcohol and ultra-pure **water** mixed at the ratio 1:5 is made to drop down. Then, the mixed liquid is stopped, and nitrogen gas is blown against the surface of the **wafer** 3 to dry it out.

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IC ICM H01L021-304

ICS H01L021-304; H01L021-68

L87 ANSWER 14 OF 15 JAPIO (C) 2003 JPO on STN

ACCESSION NUMBER: 1992-107923 JAPIO

TITLE: **CLEANING METHOD FOR SEMICONDUCTOR SUBSTRATE**
 INVENTOR: SHIROMIZU YOSHIMI
 PATENT ASSIGNEE(S): FUJITSU LTD
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 04107923	A	19920409	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1990-227126 19900829
 ORIGINAL: JP02227126 Heisei
 PRIORITY APPLN. INFO.: JP 1990-227126 19900829
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1992

AN 1992-107923 JAPIO

AB PURPOSE: To keep **cleaning** condition constant and reduce the metallic impurity pollution at the semiconductor **substrate** face by soaking a semiconductor **substrate** in the **cleaning** liquid, which is diluted with **water** within the range of not losing the **cleaning** effect and consists of the mixed liquid of **ammonium hydroxides, hydrogen peroxides**, and **water** and is heated in the condition that it is shut off by inert gas, and then applying ultrasonics to it so as to produce new **hydrogen peroxides** in the **cleaning** liquid, and then stopping only the ultrasonics, and **cleaning** it in this **cleaning** liquid.

CONSTITUTION: The **cleaning** liquid, which is diluted in, for example, [30%**nH₂O₂**:**OH** solution: 30%**H₂O₂**:**OH**]:**H₂O₂**:**1:1:1000**] by wt. ratio, is used and it is heated at a constant temperature of about 60-80°C in the condition that the surface is shut off from the air, and in this **cleaning** liquid, a semiconductor **substrate** is soaked, and then as in the condition that the semiconductor **substrate** is soaked, ultrasonics are applied to produce **H₂O₂**, and the concentration of **H₂O₂** is restored to the concentration approximately equal to the initial concentration. Next, only the ultrasonics are stopped, and the semiconductor **substrate** is kept in the regenerated **cleaning** liquid successively.

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IC ICM H01L021-304

L87 ANSWER 15 OF 15 JAPIO (C) 2003 JPO on STN
 ACCESSION NUMBER: 1992-000719 JAPIO
 TITLE: METHOD AND APPARATUS FOR **CLEANING** TREATMENT
 INVENTOR: SAKURAI TOSHIHIKO; HARAZONO MASAAKI
 PATENT ASSIGNEE(S): HITACHI LTD
 PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 04000719	A	19920106	Heisei	H01L021-304

APPLICATION INFORMATION

STN FORMAT: JP 1990-102157 19900418
 ORIGINAL: JP02102157 Heisei
 PRIORITY APPLN. INFO.: JP 1990-102157 19900418
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1992

AN 1992-000719 JAPIO

AB PURPOSE: To increase the **cleaning**-treatment number of objects to be treated by executing the following: a first **cleaning** treatment by which the objects to be treated are immersed in a mixed **solution** of **hydrogen peroxide** and pure **water**; and a second **cleaning** treatment by which the objects to be treated are immersed in a mixed **solution** of **hydrogen peroxide** and **ammonium hydroxide**.

CONSTITUTION: A **wafer** 2 is conveyed to a **cleaning** tank 4b by using a conveyance arm 6; it is immersed in a mixed **solution** of H<SB>2</SB>O<SB>2</SB> and pure **water** which has been introduced into the **cleaning** tank 4b as a chemical liquid. In the **cleaning** tank 4b, organic substances 13 which have adhered to the **wafer** 2 are oxidized by H<SB>2</SB>O<SB>2</SB> in the chemical liquid. Then, the **wafer** 2 is conveyed to a **cleaning** tank 4c by using the conveyance arm 6; it is immersed in a mixed **solution** of H<SB>2</SB>O<SB>2</SB>, NH<SB>4</SB>OH and pure **water** which has been introduced into the **cleaning** tank 4c as a chemical liquid. In the **cleaning** tank 4c, the organic substances 13 which have been oxidized at the first **cleaning** treatment are removed by H<SB>2</SB>O<SB>2</SB> and NH<SB>4</SB>OH inside the **cleaning** tank 4c. Consequently, when the treatment temperature inside the **cleaning** tank 4c is set to be high, the removal speed of the organic substances 13 is increased and the removal treatment time of the organic substances 13 inside the **cleaning** tank 4c can be shortened.

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IC ICM H01L021-304

=> file wpix
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FILE LAST UPDATED: 23 SEP 2003 <20030923/UP>
MOST RECENT DERWENT UPDATE: 200361 <200361/DW>
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=> d L89 1-8 all

L89 ANSWER 1 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN
AN 2003-079189 [08] WPIX
DNN N2003-061630 DNC C2003-020989
TI **Cleaning** liquid for electronic component, contains hydrogen fluoride and **surfactant**.
DC L03 U11
PA (OMIT-I) OMI T; (ULTR-N) ULTRACLEAN TECHNOLOGY KAIHATSU KENKYUSHO
CYC 1
PI JP 2002261069 A 20020913 (200308)* 9p H01L021-304
ADT JP 2002261069 A JP 2001-55364 20010228
PRAI JP 2001-55364 20010228
IC ICM H01L021-304
ICS C11D003-04; C11D003-395; C11D007-04; C11D010-02; C11D017-08
AB JP2002261069 A UPAB: 20030204
NOVELTY - A **cleaning** liquid contains 0.05-0.5 weight% of hydrogen fluoride and a **surfactant**.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for **cleaning** of electronic component. The concentration of ozone in the electronic component after washing with ozone **water** is 1 mg/l or more. The electronic component is then **cleaned** using **cleaning** liquid containing hydrogen fluoride and **surfactant**.

USE - For removing contaminants such as metal, organic substance and microparticle, on semiconductor **substrate** of electronic component.

ADVANTAGE - The contaminants on semiconductor **substrate** surface are removed effectively without damaging the fine structures on the **substrate**. The process is performed stably in a short time at room temperature. Curtailment and miniaturization of washing apparatus are attained. The cost of electronic component is lowered.

DESCRIPTION OF DRAWING(S) - The graph shows characteristic view of temperature dependency of particulate-removal effect of **cleaning** liquid containing **ammonium hydroxide**, **hydrogen peroxide** and **water**. (Drawing includes non-English language text).

Dwg.1/10

FS CPI EPI
FA AB; GI
MC CPI: L04-C09
EPI: U11-A10; U11-C06A1B

L89 ANSWER 2 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN
AN 2002-740773 [80] WPIX
DNN N2002-583640 DNC C2002-209749
TI Method of permanently waving hair involves wrapping dry hair onto several wrapping **devices**, applying waving lotion to dry hair and processing treated hair to obtain permanently waved hair.
DC A96 A97 D21 E19 P24
IN RATHNAM, J
PA (RATH-I) RATHNAM J
CYC 100
PI WO 2002071890 A1 20020919 (200280)* EN 52p A45D007-06
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK
DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR
KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT
RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

US 2003024542 A1 20030206 (200313) A45D007-04
 US 6557562 B2 20030506 (200338) A45D024-00

ADT WO 2002071890 A1 WO 2002-US6630 20020305; US 2003024542 A1 US 2001-802339
 20010309; US 6557562 B2 US 2001-802339 20010309

PRAI US 2001-802339 20010309

IC ICM A45D007-04; A45D007-06; A45D024-00

ICS A61K007-06; A61K007-13

AB WO 200271890 A UPAB: 20021212

NOVELTY - A method of permanently waving hair, involves wrapping dry hair onto several wrapping **devices**, applying a waving lotion to the dry hair and processing the treated hair to obtain permanently waved hair.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for straightening hair which involves applying a waving lotion to dry hair and applying tension to the hair having the applied waving lotion to obtain straightened hair.

USE - For permanently perming or straightening hair.

ADVANTAGE - The method enables permanent waving of hair in a short processing time using very low concentrations of treatment chemicals. Desired perms are achieved in a safe way for environment, perm clients, hair dressers and manufacturers. The method maximizes the benefits by virtually removing or minimizing problems of perming such as delayed penetrations, dilution and spilling of waving lotion. The lotion used is ultra mild, least spilling, processed at room temperature for very short period, contact time with the scalp is short and is safe. The cost of active raw materials used in the ultra mild perm formulations is reduced about 50-75% compared to high strength perm formulation.

Dwg.0/0

FS CPI GMPI

FA AB; DCN

MC CPI: A12-V04A; D08-A; D08-B05; E10-B02D1; E10-B04E; E10-B04E1; E10-C04D2;
 E10-E03K; E32-A02; E32-A04; E33-A03; E33-C

L89 ANSWER 3 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN

AN 2002-426448 [45] WPIX

CR 2000-062516 [05]

DNN N2002-335323 DNC C2002-120920

TI Stabilized alkaline composition for stripping or **cleaning**
integrated circuit substrates includes metal
 ion-free base and bath stabilizing agent.

DC D25 E19 L03 P43 P84 Q73 U11

IN SKEE, D C

PA (MLCW) MALLINCKRODT BAKER INC; (SKEE-I) SKEE D C; (MLCW) MALLINCKRODT INC

CYC 95

PI WO 2002033033 A1 20020425 (200245)* EN 68p C11D003-00

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ
 NL OA PT SD SE SL SZ TR TZ UG ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM
 DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC
 LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE
 SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

US 2002077259 A1 20020620 (200247) B08B007-00

AU 2001096947 A 20020429 (200255) C11D003-00

EP 1326951 A1 20030716 (200347) EN C11D003-00

R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI TR

US 6599370 B2 20030729 (200354) C23G001-02

ADT WO 2002033033 A1 WO 2001-US42406 20010928; US 2002077259 A1 CIP of US

2000-688559 20001016, US 2001-859142 20010516; AU 2001096947 A AU

2001-96947 20010928; EP 1326951 A1 EP 2001-977863 20010928, WO

2001-US42406 20010928; US 6599370 B2 CIP of US 2000-688559 20001016, US

2001-859142 20010516
FDT AU 2001096947 A Based on WO 2002033033; EP 1326951 A1 Based on WO 2002033033
PRAI US 2001-859142 20010516; US 2000-688559 20001016
IC ICM B08B007-00; C11D003-00; C23G001-02
ICS B08B003-00; B08B003-10; B08B003-14; C03C023-00; C11D007-26;
C11D007-32; C23G001-00; F23J001-00; G03F007-42
AB WO 2002033033 A UPAB: 20030821
NOVELTY - A stabilized alkaline composition comprises:
(a) metal ion-free base(s);
(b) bath stabilizing agent(s) of pKa 10-13; and
(c) water.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of **cleaning** semiconductor **wafer substrates** by contacting the **substrate** surface with the composition for a time and at a temperature to **clean** unwanted contaminants and residues from the surface.
USE - For stripping or **cleaning integrated circuit substrates** in the microelectronics industry.
ADVANTAGE - The composition removes metallic and organic contaminants from the semiconductor **wafer substrates** without damaging the **integrated circuits**, and avoids the expense and adverse consequences caused by intermediate rinses. It has a very long effective bath life.
Dwg.0/0
FS CPI EPI GMPI
FA AB; DCN
MC CPI: D11-A01B1; D11-A02B; D11-A02B2;
D11-B01B; E07-D04C; E07-D04D; E10-A18B; E10-A22E; E10-A22G;
E10-B01E; L04-C09
EPI: U11-C04A1

L89 ANSWER 4 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN
AN 2001-610387 [70] WPIX
DNN N2001-455588 DNC C2001-182224
TI Semiconductor **wafer cleaning** involves applying aqueous solution containing **ammonium hydroxide** on **wafer** having exposed metal region and simultaneously applying ultrasonic energy to solution.
DC L03 P43 U11
IN GULDI, R L; RITCHISON, J W
PA (TEXI) TEXAS INSTR INC
CYC 1
PI US 6267122 B1 20010731 (200170)* 8p B08B003-12
ADT US 6267122 B1, US 1993-119785 19930910
PRAI US 1993-119785 19930910
IC ICM B08B003-12
AB US 6267122 B UPAB: 20011129
NOVELTY - A solution containing **water** and **ammonium hydroxide** is applied to a **wafer** having exposed metal regions. Simultaneously, ultrasonic energy is applied to the solution and the **wafer** is **cleaned**.
DETAILED DESCRIPTION - A **surfactant** is added to the solution containing **ammonium hydroxide** and **water** in a ratio of 0.001-0.2. The solution is maintained at a temperature of 25-90 deg. C. After applying the solution, the **wafer** is rinsed with **water**.
USE - For **cleaning** silicon semiconductor **wafers** during electronic **device** fabrication.
ADVANTAGE - The application of ultrasonic energy to the solution

enhances the **wafer cleaning** efficiency. The particulate is efficiently removed from the **wafer** without using **hydrogen peroxide** that damages titanium nitride layer. The method utilizes wide range of concentrations, treatment times and bath temperatures based on particular demands including solution lifetime and cost.

Dwg.0/9

FS CPI EPI GMPI

FA AB

MC CPI: L04-C09

EPI: U11-A10; U11-C06A1B

L89 ANSWER 5 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN
 AN 1999-256612 [22] WPIX
 DNN N1999-191203 DNC C1999-075277
 TI Polishing method for metal film, especially in semiconductor interconnection process.
 DC A14 A32 A35 A85 G02 L03 P61 U11
 IN HINODE, K; HOMMA, Y; KONDO, S; SAKUMA, N; TAKEDA, K
 PA (HITA) HITACHI LTD
 CYC 31
 PI EP 913442 A2 19990506 (199922)* EN 42p C09G001-02
 R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
 RO SE SI
 JP 11135466 A 19990521 (199931) 19p H01L021-304
 CN 1216727 A 19990519 (199938) B24B037-00
 KR 99037374 A 19990525 (200032) H01L021-302
 US 6117775 A 20000912 (200046) H01L021-302
 TW 380083 A 20000121 (200047) B24B007-20
 JP 2001298009 A 20011026 (200203) 19p H01L021-304
 JP 3371775 B2 20030127 (200315) 19p H01L021-304
 SG 95588 A1 20030423 (200337) H01L021-306
 US 6117775 C1 20030715 (200354) H01L021-302
 US 6596638 B1 20030722 (200354) H01L021-302
 ADT EP 913442 A2 EP 1998-308923 19981030; JP 11135466 A JP 1997-299937 19971031; CN 1216727 A CN 1998-123672 19981030; KR 99037374 A KR 1998-44809 19981026; US 6117775 A US 1998-182438 19981030; TW 380083 A TW 1998-116346 19981001; JP 2001298009 A Div ex JP 1997-299937 19971031, JP 2001-77422 19971031; JP 3371775 B2 JP 1997-299937 19971031; SG 95588 A1 SG 1998-4195 19981013; US 6117775 C1 US 1998-182438 19981030; US 6596638 B1 Cont of US 1998-182438 19981030, US 2000-618999 20000718
 FDT JP 3371775 B2 Previous Publ. JP 11135466; US 6596638 B1 Cont of US 6117775
 PRAI JP 1997-299937 19971031; JP 2001-77422 19971031
 IC ICM B24B007-20; B24B037-00; C09G001-02; H01L021-302; H01L021-304;
 H01L021-306
 ICS C09K003-14
 ICA B24B037-04
 AB EP 913442 A UPAB: 19990609
 NOVELTY - The polishing method for removing at least part of a metal film, involves mechanically rubbing a metal film surface using a polishing solution comprising less than 1 wt % of a polishing abrasive. The solution has a pH and oxidation-reduction potential in the domain of corrosion of the metal film. The polishing abrasive may also have an oxidizer and a substance which renders an oxide **water-soluble**.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for a method of manufacturing a semiconductor **device** by forming an insulating film, having an opening exposing an impurity-doped layer, interconnection layer or conducting layer on a **substrate**, forming a metal film, removing the metal film by the above method, **cleaning** and drying

USE - Polishing a metal film in a semiconductor **device** interconnection process.

ADVANTAGE - Reduced scratches on the metal film surface, dishing and erosion are suppressed, peeling is reduced, the cost of the polishing solution and polishing pad are reduced, throughput is increased, and dust production is suppressed.

DESCRIPTION OF DRAWING(S) - The figure shows the chemical mechanical polishing machine used to implement the method.

Dwg.1/26

FS CPI EPI GMPI
 FA AB; GI
 MC CPI: A11-B05; A11-C; A12-E04; A12-E07C; G02-C; L04-B04
 EPI: U11-A10; U11-C06A1A; U11-C07C2

L89 ANSWER 6 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN
 AN 1997-289504 [26] WPIX
 DNN N1997-239721 DNC C1997-093195
 TI Production of **wafer-cleaning** solutions used for washing semiconductors - by mixing hydro fluoric acid, hydrogen per oxide, nitric acid, alkyl **ammonium hydroxide**, **surfactants** and **water**.
 DC A97 D25 E19 L03 U11
 IN ITANO, M; KAMIYA, F; KEZUKA, T; SUYAMA, M
 PA (DAIK) DAIKIN IND LTD; (DAIK) DAIKIN KOGYO KK
 CYC 22
 PI WO 9718582 A1 19970522 (199726)* JA 21p H01L021-304
 RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
 W: CN JP KR US
 EP 871209 A1 19981014 (199845) EN H01L021-304
 R: DE FR GB IT
 JP 09518733 X 19990126 (199914) H01L021-304
 CN 1202274 A 19981216 (199918) H01L021-304
 US 6068788 A 20000530 (200033) C09K013-04
 KR 99063592 A 19990726 (200043) H01L021-304
 TW 387944 A 20000421 (200061) C23F001-16
 US 6159865 A 20001212 (200067) # H01L021-302
 KR 269013 B1 20001101 (200139) H01L000-00
 ADT WO 9718582 A1 WO 1996-JP3313 19961111; EP 871209 A1 EP 1996-937559
 19961111, WO 1996-JP3313 19961111; JP 09518733 X WO 1996-JP3313 19961111,
 JP 1997-518733 19961111; CN 1202274 A CN 1996-198370 19961111; US 6068788
 A WO 1996-JP3313 19961111, US 1998-51492 19980422; KR 99063592 A WO
 1996-JP3313 19961111, KR 1998-702035 19980319; TW 387944 A TW 1996-115661
 19961219; US 6159865 A Div ex US 1998-51492 19980422, US 2000-523216
 20000310; KR 269013 B1 WO 1996-JP3313 19961111, KR 1998-702035 19980319
 FDT EP 871209 A1 Based on WO 9718582; JP 09518733 X Based on WO 9718582; US
 6068788 A Based on WO 9718582; KR 99063592 A Based on WO 9718582; US
 6159865 A Div ex US 6068788
 PRAI JP 1995-322292 19951115; JP 1995-322291 19951115; US 2000-523216
 20000310
 REP JP 641770; JP 684866; JP 745600
 IC ICM C09K013-04; C23F001-16; H01L000-00; H01L021-302; H01L021-304
 ICS C09K013-00; C09K013-06; C09K013-08; C11D001-12; C11D003-04;
 C11D017-08; H01L021-308
 AB WO 9718582 A UPAB: 19970626
 A **wafer-cleaning** solution comprises 20-60 wt.% hydrofluoric acid (HF) with 0.1-1000 ppm $C_nH_{2n+1}ph(SO_3M)Oph(SO_3M)$ (where, ph = phenylene, n = 5-20, M = H or salt), $C_nH_{2n+1}phO(CH_2CH_2O)_mSO_3M$ (where, m = 0-20) and $C_nH_{2n+1}O(CH_2CH_2O)_mSO_3M$, and the balance of **water**.
 Also claimed is a processes for producing the **wafer-cleaning** solution by diluting the above **cleaning**

solution with **water** to contain 0.1-5 wt.% HF and 0.01-100 ppm of the above **surfactant(s)**. This is carried by adding **water** and **hydrogen peroxide (H₂O₂)** to the **cleaning** solution to contain 0.1-10 wt.% HF, 0.01-30 wt.% H₂O₂ and 0.01-100 ppm of the above **surfactant(s)**. Next, **water** and nitric acid (HNO₃) are added to the above **cleaning** solution so it contains 0.1-50 wt.% HF, 0.1-70 wt.% HNO₃ and 0.01-100 ppm of the **surfactant(s)**. **Water** and ammonium fluoride (NH₄F) are then added to the **cleaning** solution so it contains 0.1-10 wt.% HF, 1-40 wt.% NH₄F and 0.01-100 ppm of the **surfactant(s)**. Further claimed are several other solutions.

USE - The **wafer-cleaning** solutions are used prevent contamination due to adhered microparticles and other foreign bodies on silicon or thermal-acidified membrane **wafer**, semiconductor elements and the like.

ADVANTAGE - The **wafer-cleaning** solutions have excellent solubility, storability and transportability, without foaming.

Dwg.0/0

FS CPI EPI

FA AB; DCN

MC CPI: A12-E07A; A12-W12B; D11-A01A; D11-A01B1;
D11-A01B2; D11-A03A; E10-A09A; E10-A09B4; E10-A22E;
E10-A22G; E31-B03C; E31-E; E31-H05; E32-A04; L04-C09
EPI: U11-C06A1B

L89 ANSWER 7 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN

AN 1990-380242 [51] WPIX

DNN N1990-289717 DNC C1990-165687

TI Wet **cleaning** process for semiconductor **substrate** - comprises treatment with hydrofluoric acid **cleaning** with e.g. choline, rinsing and drying.

DC A85 L03 P43 U11

IN TANAKA, M

PA (DNIS) DAINIPPON SCREEN SEIZO KK; (DNIS) DAINIPPON SCREEN MFG CO LTD

CYC 3

PI JP 02275631 A 19901109 (199051)*
US 5129955 A 19920714 (199231) 13p B08B003-08
KR 9301287 B1 19930225 (199417) H01L021-302

ADT JP 02275631 A JP 1989-120172 19890512; US 5129955 A US 1990-462014
19900108; KR 9301287 B1 KR 1990-116 19900108

PRAI JP 1989-5096 19890111; JP 1989-120172 19890512

IC ICM B08B003-08; H01L021-302

ICS C23G001-02; H01L021-30

AB JP 02275631 A UPAB: 19930928

Process comprises (a) treating the **substrate** with a surface treating agent contg. HF; (b) **cleaning** the surface of the **substrate**; (c) rinsing the **substrate** in pure **water**, removing liq. and drying. The **cleaner** contains silicone and/or its deriv. and surface of the **substrate** is **cleaned** after being rendered hydrophilic.

Appts. to carry out the process is also claimed.

USE/ADVANTAGE - The process is applied to semiconductor **device** with no generation of oxide film on it, effective removal of colloidal particles and without re-adhesion of F on the **wafer**

In an example, a **cleaning** appts. is set in advance of photoresist coating process. A **wafer** is **cleaned** by 5% HF soln. to removing SiO film on it, **cleaned** with a choline **cleaning** soln., rinsed in pure **water**. Surface of the **wafer** is slightly etched by pure **water** contg. silicone

and F ion or inorganic ion combines with choline cation to form colloidal particles, and covered with OH(-) to make it hydrophilic. The colloidal particles are removed by centrifugal force with the **cleaner**, and **substrate** is dried. As a result, the number of particles remaining is 44 by choline **cleaning** but 111 particles by **surfactant cleaning** and 1105 particles by H₂O₂ **cleaning**.

1/3

FS CPI EPI GMPI

FA AB

MC CPI: A06-A00E2; A12-E07C; A12-W12B; L04-C09
EPI: U11-C04A1

L89 ANSWER 8 OF 8 WPIX COPYRIGHT 2003 THOMSON DERWENT on STN

AN 1986-121928 [19] WPIX

DNN N1986-089955 DNC C1986-051967

TI Liq. **detergent** compsn. for **cleaning** e.g. silicon wafers - contains **water**, ammonium hydroxide, hydrogen peroxide and ammonium cpd..

DC D25 E35 E36 U11

PA (TOKE) TOSHIBA KK

CYC 1

PI JP 61060799 A 19860328 (198619)* 4p
JP 63014038 B 19880329 (198816)

ADT JP 61060799 A JP 1984-181844 19840831

PRAI JP 1984-181844 19840831

IC C11D007-18; H01L021-30

AB JP 61060799 A UPAB: 19930922
Compsn. comprises (A) **water** (1000 ml), (B) at least 2.5 mol of NH₄OH, (C) 0.9-3.8 mol of H₂O₂ and (D) 0.1-2.5 mol of at least one ammonia salt selected from phosphate, citrate, acetate, silicate or other inorganic salt and opt. (E) 2-50 g of **surfactant**.

Aq. ammonia and aq. H₂O₂ sterilise and remove bacteria and organic fouling and H₂O₂ oxidises trace of impurity metals. The aq. ammonia attacks the surface layer of glass **substrate** to remove adsorbed fouling together with the thin surface layer to improve the wettability of surface of **substrate**. The aq. ammonia turns the **detergent** soln. to alkaline pH to prevent the destruction of insulating material and acts as buffer to stabilise the **detergent** soln. The inorganic cation and **surfactant** retain selectively in the form of electric double layer to protect the surface of metal. The washing power is enhanced by applying ultrasonic wave and heating at 70-85 deg.C.

USE/ADVANTAGE - The **detergent** compsn. does not attack amphoteric elements such as Al and various metal and adheres no scum after the washing. It is suitable for **cleaning substrate** board such as silicon **wafer** before the formation of film.

0/0

FS CPI EPI

FA AB

MC CPI: D11-A; D11-B14; D11-B20;
D11-B22; D11-D07; E05-S; E10-C02A; E10-C04J; E31-E;
E31-K05E; E31-P05D; E32-A04
EPI: U11-C07